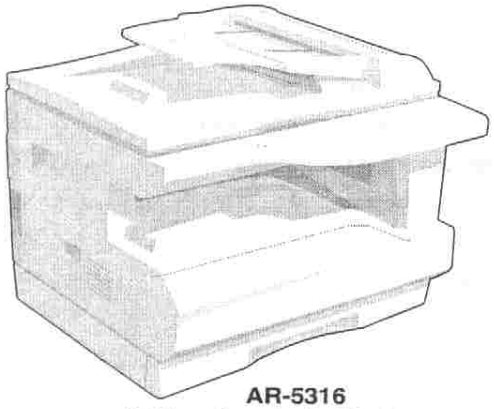
SHARP SERVICE MANUAL

CODE : 00ZAR5316/A1E



AR-5316
(With optional AR-SP6 installed)

DIGITAL COPIER

MODEL AR-5316

(For North America)

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Parts marked with "⚠" are important for maintaining the safety of the set.
Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

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[1] GENERAL

1. Note for servicing

Pictogram

The label (⚠ ⚠) in the fusing area of the machine indicates the following:

⚠ : Caution, risk of danger

⚠ : Caution, hot surface

A. Warning for servicing

- The fusing area is hot. Exercise care in this area when removing misfed paper.
- Do not look directly at the light source. Doing so may damage your eyes.

B. Cautions for servicing

- Do not switch the machine rapidly on and off. After turning the machine off, wait 10 to 15 seconds before turning it back on.
- Machine power must be turned off before installing any supplies.
- Place the machine on a firm, level surface.
- Do not install the machine in a humid or dusty location.
- When the machine is not used for a long time, for example, during prolonged holidays, turn the power switch off and remove the power cord from the outlet.
- When moving the machine, be sure to turn the power switch off and remove the power cord from the outlet.
- Do not cover the machine with a dust cover, cloth or plastic film while the power is on. Doing so may prevent heat dissipation, damaging the machine.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.
- The socket-outlet shall be installed near the machine and should be easily accessible.

C. Note for installation place

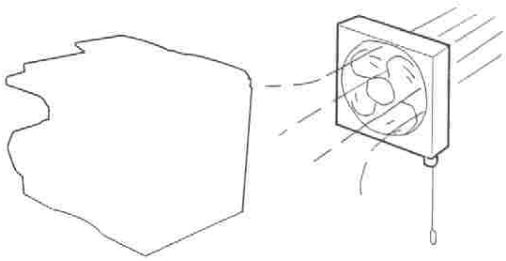
Improper installation may damage the machine. Please note the following during initial installation and whenever the machine is moved.

Caution : If the machine is moved from a cool place to a warm place, condensation may form inside the machine. Operation in this condition will cause poor copy quality and malfunctions. Leave the machine at room temperature for at least 2 hours before use.

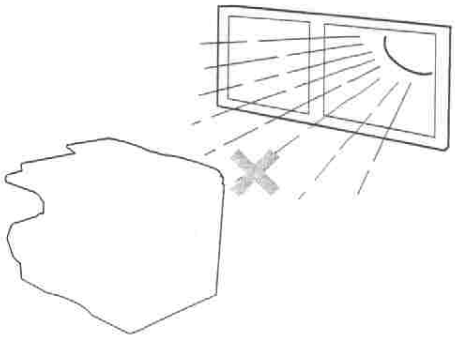
Do not install your machine in areas that are:

- damp, humid, or very dusty

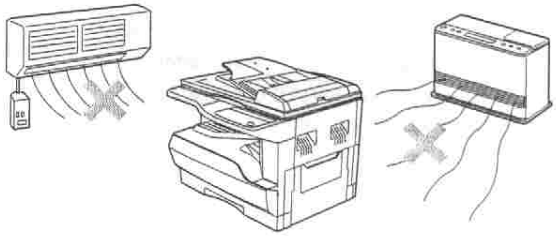
- poorly ventilated



- exposed to direct sunlight



- subject to extreme temperature or humidity changes, e.g., near an air conditioner or heater.

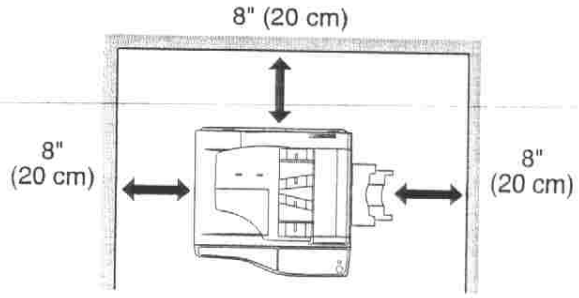


The machine should be installed near an accessible power outlet for easy connection and disconnection.

Be sure to connect the power cord only to a power outlet that meets the specified voltage and current requirements. Also make certain the outlet is properly grounded.

Note : Connect the machine to a power outlet which is not used for other electric appliances. If a lighting fixture is connected to the same outlet, the light may flicker.

Be sure to allow the required space around the machine for servicing and proper ventilation.



[2] SPECIFICATIONS

The table below shows the specifications of this model and the contents of changes from the AR-M160/M205 and AR-5316.

Item	AR-M160	AR-5316
Paper feed system	1cassette + Multi manual paper feed	One automatic feeding paper tray(250sheets) + bypass tray(100sheets)
Weight	Approx.31.3Kg	Approx.31.3Kg (Not including TD cartridge)
Interface	USB1.1/USB2.0 IEEE1284	IEEE1284parallel connector/USB1.1

Option

Machine	Model	AR-M160	AR-5316	Remark
250 sheets paper feed unit	AR-D24 / D25	O	-	
SPF	AR-SP6	O	O	
Original cover	AR-VR5	Standard	Standard	

O : The option can be installed.
- : The option cannot be installed.

[3] CONSUMABLE PARTS

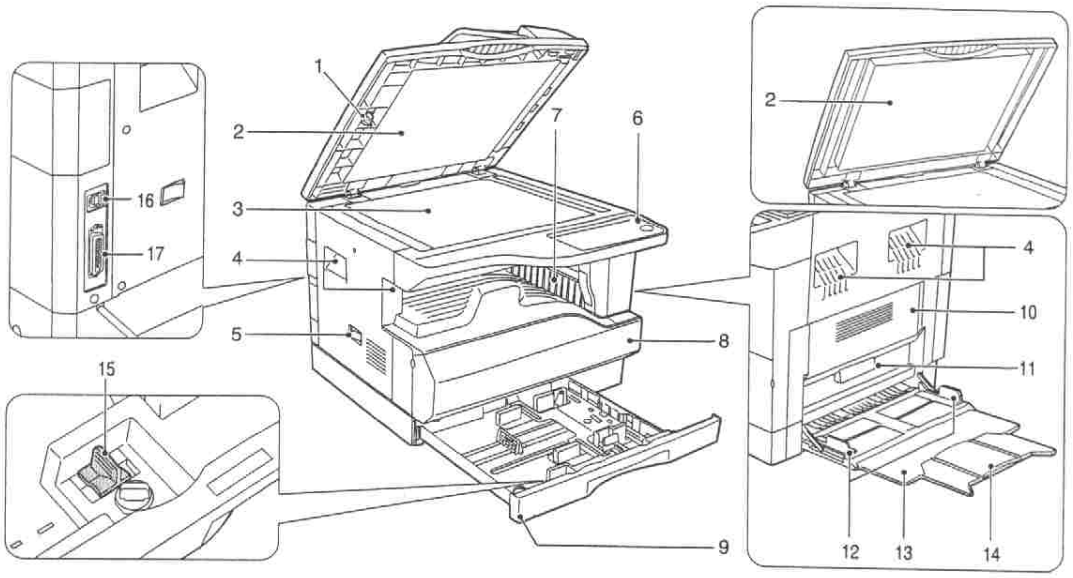
1. Supply system table

NO	Name	Content		Life	Product name	Remark
1	TD cartridge(Black)	Toner developer cartridge (Toner: Net Weight 300g) (Developer: Net Weight 400g) IC chip Polyethylene bag	x1 x1 x1	9K	AR-016TD	*Life setting by LT 5% document
2	Drum cartridge	Drum cartridge	x1	30K	AR-016DR	

Packed items:DR cartridge(30K)/TD cartridge(4.5K)
Note 1: The individual carton is printed with English, German, French, and Spanish as well as the green mark.

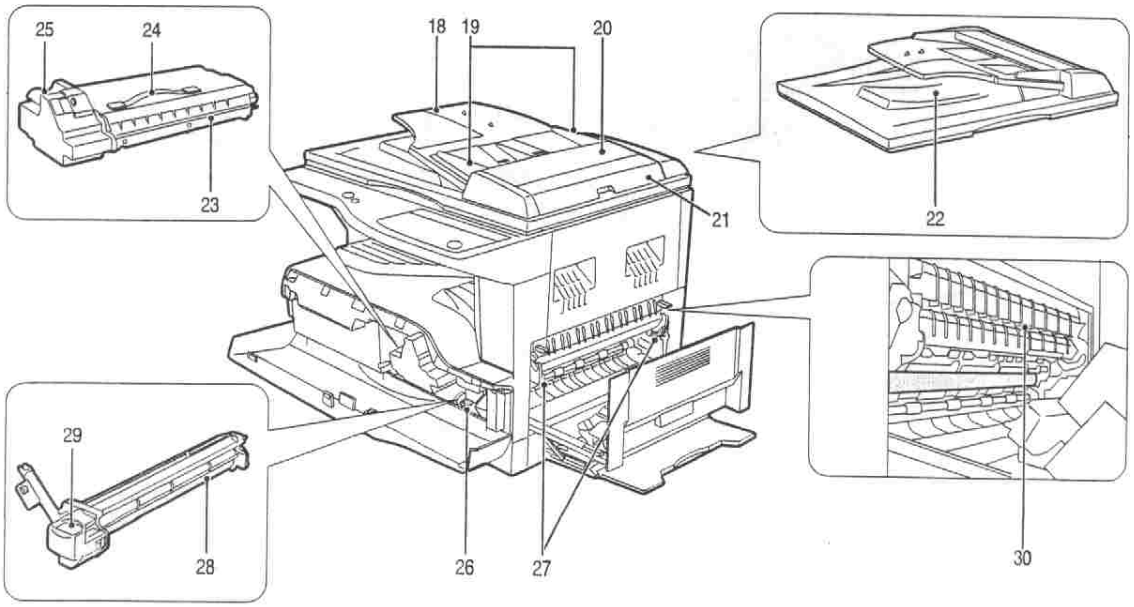
[4] EXTERNAL VIEWS AND INTERNAL STRUCTURES

1. Appearance



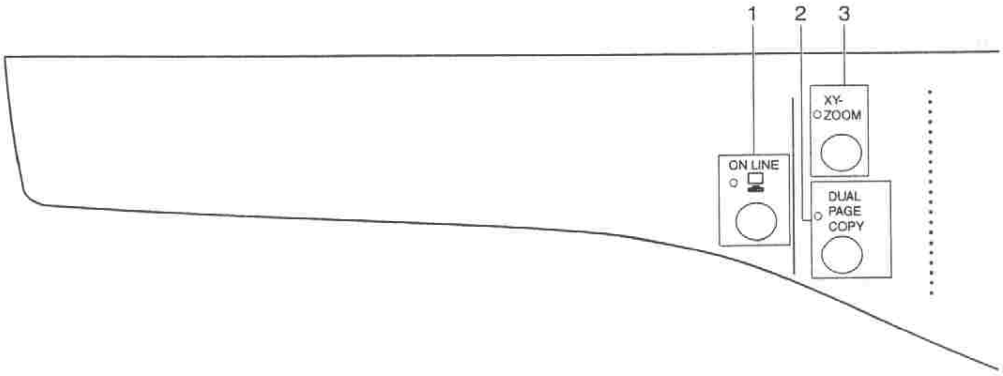
1	Glass cleaner	2	Document feeder cover (when the SPF is installed) /document cover	3	Document glass
4	Handles	5	Power switch	6	Operation panel
7	Paper output tray	8	Front cover	9	Paper trays
10	Side cover	11	Side cover handle	12	Bypass tray guides
13	Bypass tray	14	Bypass tray extension	15	Charger cleaner
16	USB 1.1 connector	17	Parallel connector		

2. Internal

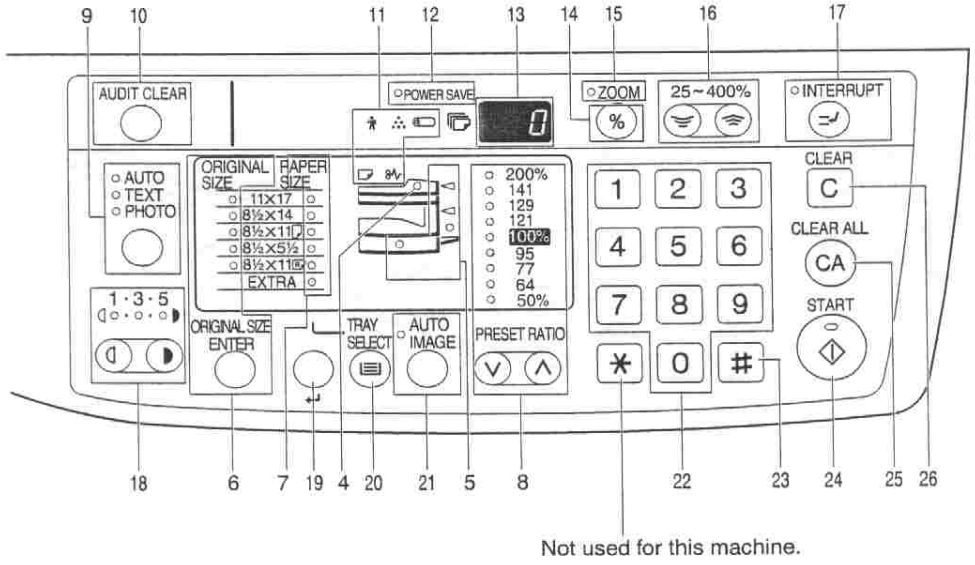


18	Document feeder tray (when the SPF is installed)	19	Original guides (when the SPF is installed)	20	Feeding roller cover (when the SPF is installed)
21	Right side cover (when the SPF is installed)	22	Exit area (when the SPF is installed)	23	TD cartridge
24	TD cartridge strap	25	TD cartridge lock release lever	26	Roller rotating knob
27	Fusing unit release levers	28	Drum cartridge	29	Drum cartridge handle
30	Fusing unit paper guide				

3. Operation Section



1	ON LINE key/indicator	2	DUAL PAGE COPY key/indicator	3	XY-ZOOM key/indicator
4	SPF indicator (when the SPF is installed)	5	Paper feed location / misfeed location indicators	6	ORIGINAL SIZE ENTER key / ORIGINAL SIZE indicators
7	PAPER SIZE indicators	8	PRESET RATIO selector keys / indicators		



Not used for this machine.

9	AUTO/TEXT/PHOTO key / indicators	10	AUDIT CLEAR key	11	Alarm indicators
12	POWER SAVE indicator	13	Display	14	Copy ratio display key
15	ZOOM indicator	16	Zoom keys	17	INTERRUPT key / indicator
18	Light and Dark keys / indicators	19	PAPER SIZE ENTER key	20	TRAY SELECT key
21	AUTO IMAGE key / indicator	22	Numeric keys	23	# key
24	START key / indicator	25	CLEAR ALL key	26	CLEAR key

[5]UNPACKING AND INSTALLATION

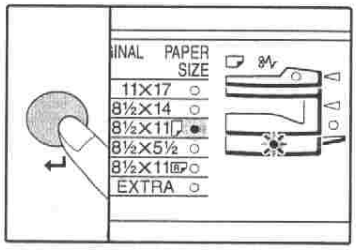
5. Changing a tray's paper size setting

Follow these steps to change a tray's paper size setting.

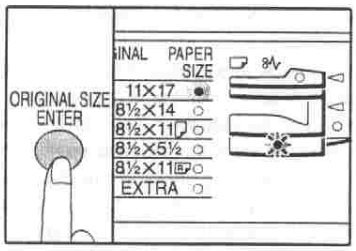
Note:

- The paper size setting cannot be changed when the machine has stopped temporarily due to running out of paper or a misfeed, or during interrupt copying.
- During printing (even in copy mode), the paper size setting cannot be changed.
- Do not load paper that is a different size than the paper size setting. Copying will not be possible.

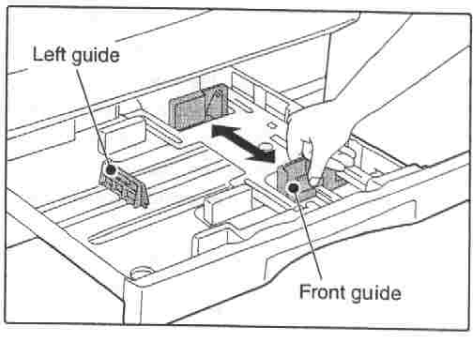
1) Hold down the [PAPER SIZE ENTER] key for more than 5 seconds to set the selected paper size.
   The currently selected paper feed location indicator will blink and the corresponding paper size (which is currently set) indicator will light steadily.
   All other indicators will go out.



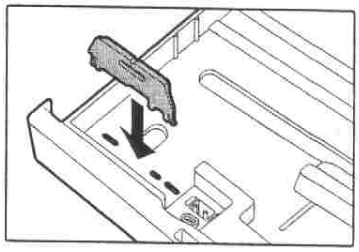
2) Use the [ORIGINAL SIZE ENTER] key to select the paper size.
   The indicator of the selected paper size lights up.



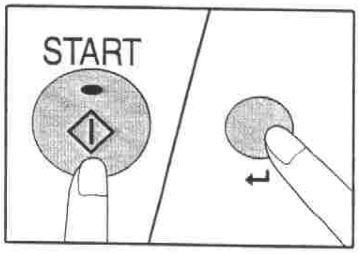
3) Squeeze the lock lever of the front guide and slide the front guide to match the width of the paper, and move the left guide to the appropriate slot as marked on the tray.



- The front guide is a slide-type guide. Grasp the locking knob on the guide and slide the guide to the indicator line of the paper to be loaded.
- The left guide is an insert-type guide. Remove it and then insert it at the indicator line of the paper to be loaded.
- When using 11" x 17" sized paper store the left guide in the slot at the left front of the paper tray.



4) Press the [START] key and then the [PAPER SIZE ENTER] key.
   To change the paper size setting of another tray, repeat steps 2) to 4) after pressing the [START] key.



Note: Affix the paper size label for the paper size selected in step 2) to the label position on the right end of the tray.

Important points when using the printer mode

- Make sure that the tray's paper size setting is the same as the tray's paper size setting in the printer driver. For example, if the tray's paper size setting is 8-1/2"x11R, set "Setting Paper Size" to "Letter R". For more information, see "CONFIGURING THE PRINTER DRIVER" in the "Software Setup Guide".

[6]ADJUSTMENTS

1.Adjustment item list

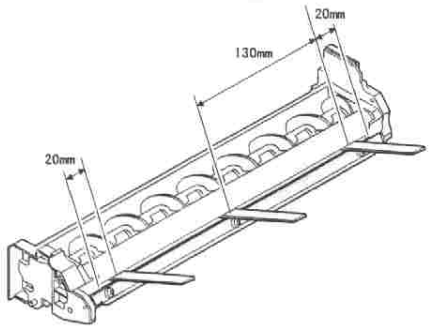
Section		Adjustment item		Adjustment procedure/SIM No.
A	Process section	(1)	Developing doctor gap adjustment	Developing doctor gap adjustment
		(2)	MG roller main pole position adjustment	MG roller main pole position adjustment
		(3)	Developing bias voltage check	
		(4)	Main charger voltage check	
B	Mechanism section	(1)	Image position adjustment	SIM-50
		(2)	Main scanning direction (FR direction) distortion balance adjustment	No. 2/3 mirror base unit installing position adjustment
				Copy lamp unit installing position adjustment
		(3)	Main scanning direction (FR direction) distortion adjustment	Rail height adjustment
		(4)	Sub scanning direction (scanning direction) distortion adjustment	Winding pulley position adjustment
		(5)	Main scanning direction (FR direction) magnification ratio adjustment	SIM 48-1
		(6)	Sub scanning direction (scanning direction) magnification ratio adjustment	OC mode in copying (SIM 48-1)
				SPF mode in copying (SIM 48-5)
		(7)	Off center adjustment	OC mode (SIM 50-12)
				SPF mode (SIM 50-12)
		(8)	SPF white correction pixel position adjustment (required in an SPF model when replacing the lens unit)	SIM63-7
C	Image density adjustment	(1)	Copy mode	SIM 46-1

2.Copier adjustment

A.Process section

(1) Developing doctor gap adjustment

1) Loosen the developing doctor fixing screw A.
2) Insert a thickness gauge of 1.5mm to the three positions at 20mm and 130mm from the both ends of the developing doctor as shown.



3) Push the developing doctor in the arrow direction, and tighten the developing doctor fixing screw. (Perform the same procedure for the front and the rear frames.)
4) Check the clearance of the developing doctor. If it is within the specified range, then fix the doctor fixing screw with screw lock.

* When inserting a thickness gauge, be careful not to scratch the developing doctor and the MG roller.

<Adjustment specification>

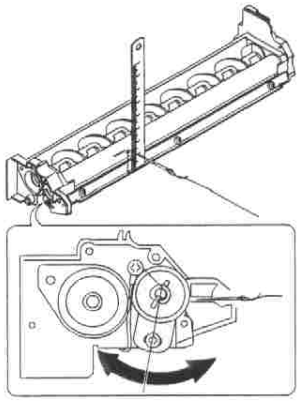
Developing doctor gap

Both ends (20mm from the both ends) : $1.5^{+0.1}_{-0.15}$ mm

C (Center) (150mm from the both ends) :$1.55^{+0.15}_{-0.2}$ mm

(2) MG roller main pole position adjustment

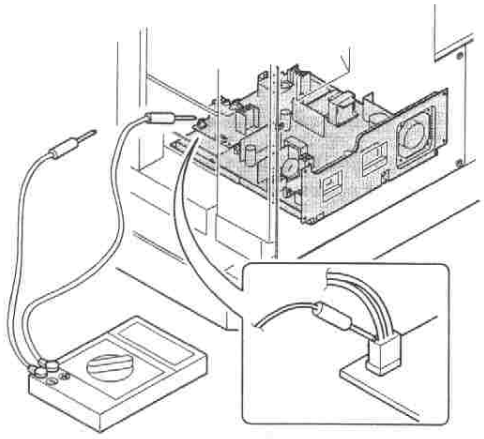
1) Remove and separate the waste toner box and put the developing unit on a flat surface.
2) Tie a string to a needle or a pin.
3) Hold the string and bring the needle close to the MG roller horizontally. (Do not use paper clip, which is too heavy to make a correct adjustment.) (Put the developing unit horizontally for this adjustment.)
4) Do not bring the needle into contact with the MG roller, but bring it to a position 2 or 3mm apart from the MG roller. Mark the point on the MG roller which is on the extension line from the needle tip.
5) Measure the distance from the marking position to the top of the doctor plate of the developing unit to insure that it is 18mm.
   If the distance is not within the specified range, loosen the fixing screw A of the main pole adjustment plate, and move the adjustment plate in the arrow direction to adjust.



(3)Developing bias voltage check

Note: Use a digital multi-meter with an internal resistance of 10MΩ or more.

1) Set the digital multi-meter range to DC700V.
2) Put the test rod of the digital multi-meter on the developing bias voltage output check pin.
3) Turn on the power, execute SIM25-1.



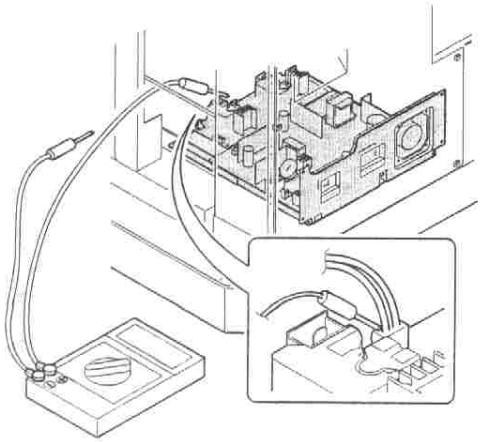
<Specification>

Mode	Specification
Developing bias voltage	DC - 400±8V

(4) Grid bias voltage check

Note: Use a digital multi-meter with an internal resistance of 10MΩ or more.

1) Set the digital multi-meter range to DC700V.
2) Put the test rod of the digital multi-meter on the grid bias voltage output check pin.
3) Turn on the power.
   (The voltage is outputted in the grid bias High output mode during warming up, and in the grid bias Low output mode when warming up is completed.)



<Specification>

Mode	Specification
Grid bias LOW	DC - 400±8V
Grid bias HIGH	DC - 525±10V

B.Mechanism section

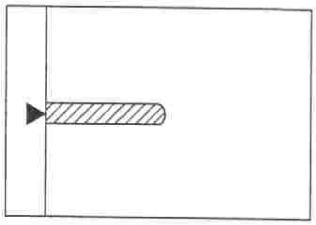
Note: If a jam error or paper empty occurs during copying in the adjustment by the simulation, the image data are not saved, and therefore recopying is required.

(1)Image position adjustment

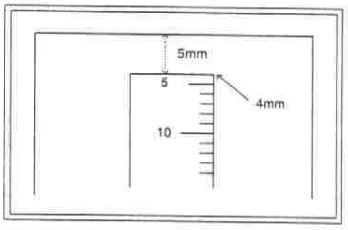
a.OC image lead edge position adjustment (SIM 50-1)

Note: In advance to this adjustment, the sub scanning magnification ratio adjustment must be performed.

1) Set a scale on the OC table as shown below.



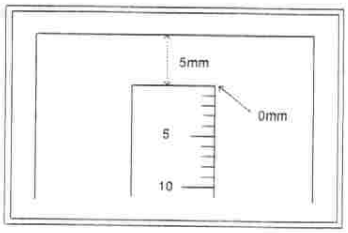
2) Make a copy.
3) Check the copy output. If necessary, perform the following adjustment procedures.
4) Execute SIM 50-1.
5) Set the OC lead edge position set value (Exposure display <<PHOTO>> ON) to [1]
   The OC image scanning start position is shifted inside the document edge.
6) Set the main cassette lead edge void adjustment value (Exposure display <<TEXT>> ON) * to [1]
   The lead edge void becomes the minimum.
7) Set the main cassette print start position value (Exposure display <<AUTO+MAIN CASSETTE LAMP>> ON) to [1] and make a copy.
   The print start position is shifted inside the document edge.



*The dimension varies depending on the model.

8) Measure the image loss R of the copied image. Enter the set value of the image scanning lead edge position (Exposure display <<PHOTO>> ON) again.

•1 step of the set value corresponds to about 0.1mm shift.
•Calculate the set value from the formula below.
R/0.1(mm) = Image loss set value
<R: Image loss measurement value (mm)>



* The scanning edge is set.
(A line may be printed by scanning the document edge.)

Example: 4/0.1 = 40 = about 40

Note: If the set value is not obtained from the above formula, perform the fine adjustment.

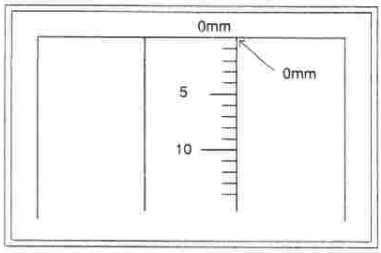
9) Measure the distance H between the paper lead edge and the image print start position. Set the image print start position set value (Exposure display <<AUTO+MAIN CASSETTE LAMP>> ON) again.

•1 step of the set value corresponds to about 0.1mm shift.

•Calculate the set value from the formula below.

H/0.1(mm) = Image print start position set value

<H: Print start position measurement value (mm)>



*Fit the print edge with the paper edge, and perform the lead edge adjustment.

Example: 5/0.1 = 50 = about 50

Note: If the set value is not obtained from the above formula, perform the fine adjustment.

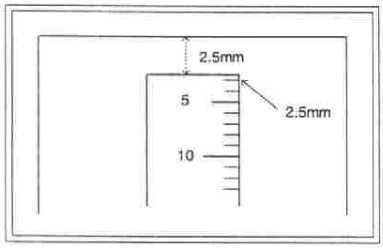
10) Set the lead edge void adjustment value (Exposure display <<TEXT>> ON)* again.

•1 step of the set value corresponds to about 0.1mm shift.

•Calculate the set value from the formula below.

B/0.05 (mm) = Lead edge void adjustment value

<B: Lead edge void (mm)>



Example: When setting the lead edge void to 2.5mm
:2.5 /0.05 = about 50

Note: If the set value is not obtained from the above formula, perform the fine adjustment.

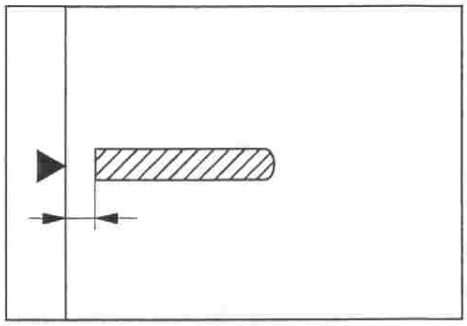
* Multi bypass tray lead edge void adjustment: Exposure display <<TEXT + PHOTO>>

<Adjustment specification>

Adjustment mode	SIM	LED	Set value	Spec value	Set range
OC image lead edge position	SIM 50-1	PHOTO	R/0.1	Lead edge void: 1 - 4mm Image loss: 3mm or less	1 ~ 99
Main cassette print start position		AUTO + MAIN	B/0.1		
Multi bypass tray print start position		AUTO + MULTI			
Lead edge void		TEXT	B/0.05		

b.SPF image lead edge position adjustment (SIM50-6)

1) Set a scale on the OC table as shown below.



Note: Since the printed copy is used as a test chart, put the scale in paralled with the edge lines.

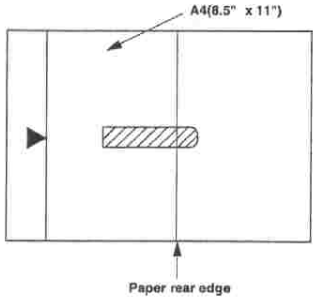
2) Make a copy, Then use the copy output as an original to make an SPF copy again.
3) Check the copy output. If necessary, perform the following adjustment procedures.
4) Execute SIM 50-6.
5) Set the SPF lead edge position set value (Exposure display <<AUTO>> ON) so that the same image is obtained as that obtained in the previous OC image lead edge position adjustment.

<Adjustment specification>

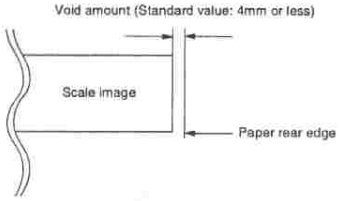
Adjustment mode	SIM	LED	Set value	Spec value	Set range
SPF image lead edge position (1st print surface)	SIM 50-6	AUTO	1 step: 0.1mm shift	Lead edge void: 1 - 4mm Image loss: 3mm or less	1 ~ 99

c.Rear edge void adjustment (SIM50-1, SIM50-19)

1) Set a scale as shown in the figure below.



2) Set the document size to A4 (8.5" x 11"), and make a copy at 100%.
3) If necessary, perform the following adjustment procedure.



4) Execute SIM 50-1 and set the density mode to AUTO + TEXT + PHOTO (Rear edge void).The currently set adjustment value is displayed.
5) Enter the set value and press the start key. The correction value is stored and a copy is made.

<Adjustment specification>

Mode	SIM	LED	Set value	Specifi-cation	Set range
Rear edge void	SIM 50-1	AUTO + TEXT + PHOTO	1 step: 0.1mm shift	4mm or less	1 ~ 99

d. Paper off center adjustment (SIM50-10)

1) Set a test chart (UKOG-0089CSZZ) on the document table.
2) Select a paper feed port and make a copy. Compare the copy and the test chart. If necessary, perform the following adjustment procedure.
3) Execute SIM 50-10. After completion of warm-up, shading is performed and the currently set off center adjustment value of each paper feed port is displayed.
4) Enter the set value and press the start key. The correction value is stored and a copy is made.

<Adjustment specification>

Mode	SIM	LED	Set value	Specifi-cation	Set range
Paper off center	SIM 50-10	AUTO + Selected tray ON	Add 1: 0.1mm shift to R side. Reduce 1: 0.1mm shift to L side.	Single: Center ±2.0mm	1 ~ 99

e.Side edge void area adjustment (SIM26-43)

Note: Before performing this adjustment, be sure to check that the paper off center adjustment (SIM 50-10) is completed.

1) Set a test chart (UKOG-0089CSZZ) on the document table.
2) Select a paper feed port and make two copies. Compare the 2nd copy and the test chart. If necessary, perform the following adjustment procedure.

* The 1st copy does not show the void. Be sure to check the 2nd copy.

3) Execute SIM 26-43 and set the density mode to AUTO(right edge void) + TEXT (Left edge void).
The currently set adjustment value is displayed.
4) Enter the set value and press the start key. The correction value is stored.

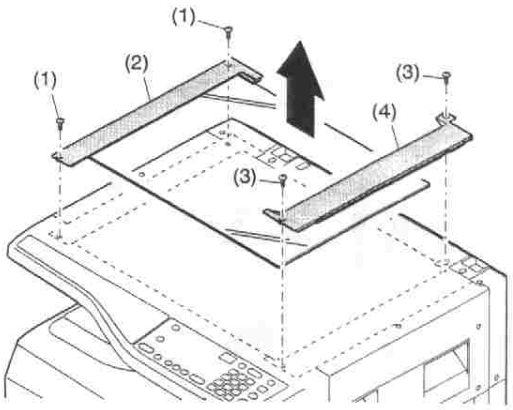
<Adjustment specification>

ode	SIM	LED	Set value	Specifi-cation	Set range
Left edge void	SIM 26-43	AUTO (right edge) + TEXT (left edge)	1 step: 0.5mm shift	0.5 ~ 4mm	1 ~ 99

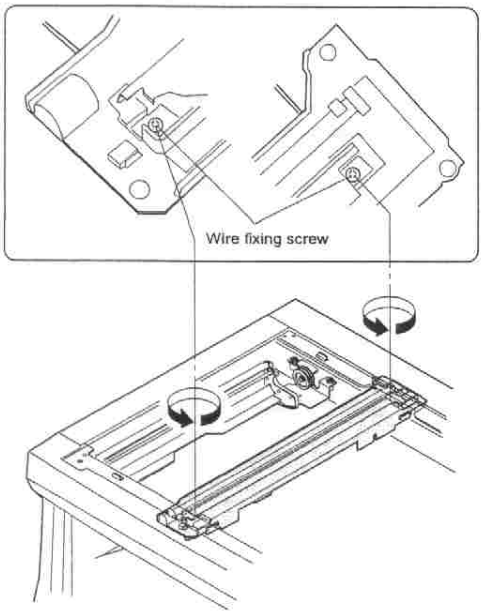
* The void adjustment values on the right and the left must be the same.

(2) Main scanning direction(FR direction) distortion balance adjustment

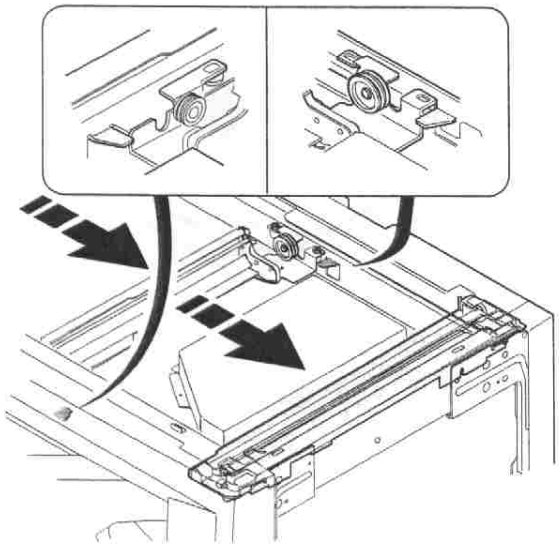
1) Remove the OC glass and the right cabinet.



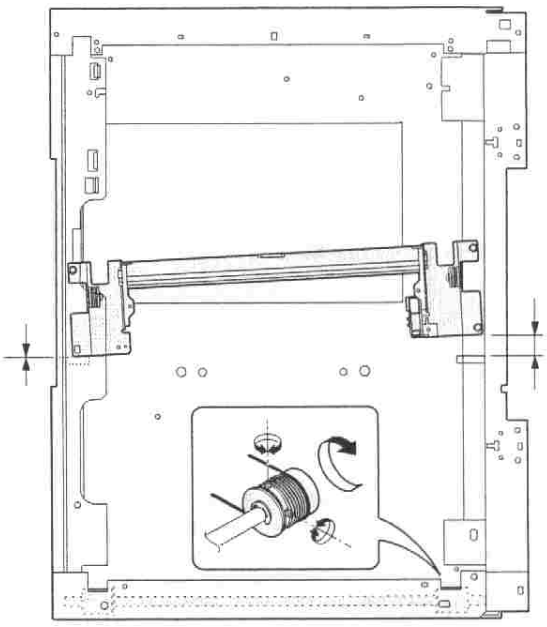
2) Loosen the copy lamp unit wire fixing screw.



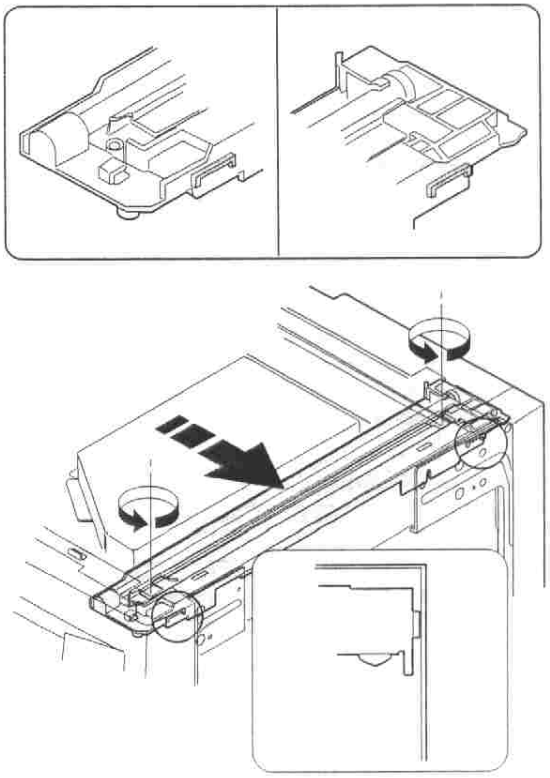
3) Manually turn the mirror base drive pulley and bring No. 2/3 mirror base unit into contact with the positioning plate. At that time, if the front frame side and the rear frame side of No. 2/3 mirror base unit are brought into contact with the positioning plate at the same time, the mirror base unit parallelism is proper. If one of them is in contact with the positioning plate, perform the adjustment of 4).



4) Loosen the set screw of the scanner drive pulley which is not in contact with No. 2/3 mirror base unit positioning plate.
5) Without moving the scanner drive pulley shaft, manually turn the scanner drive pulley until the positioning plate is brought into contact with No. 2/3 mirror base unit, then fix the scanner drive pulley.

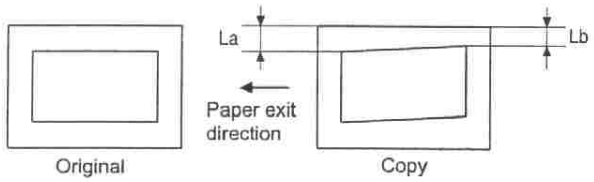


6) Put No. 2/3 mirror base unit on the positioning plate again, push the projections on the front frame side and the rear frame side of the copy lamp unit to the corner frame, and tighten the wire fixing screw.

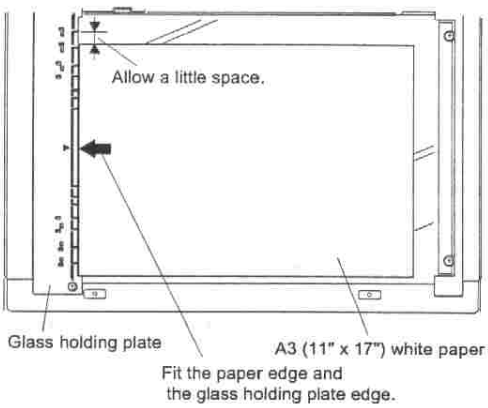


(3)Main scanning direction (FR direction) distortion adjustment

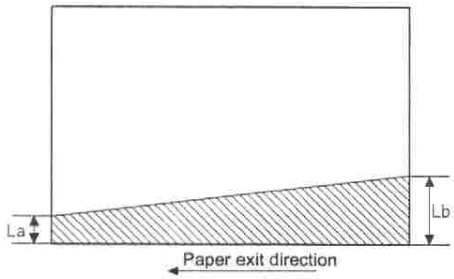
This adjustment must be performed in the following cases:
•When the mirror base drive wire is replaced.
•When the lamp unit, or No. 2/3 mirror holder is replaced.
•When a copy as shown is made.



1) Set A3 (11" x 17") white paper on the original table as shown below.



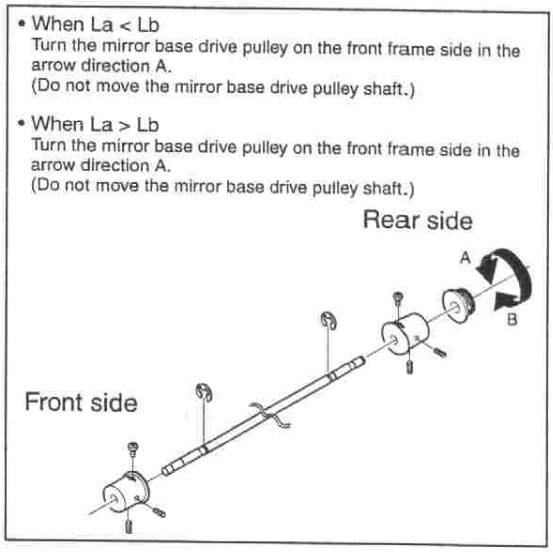
2) Open the original cover and make a normal (100%) copy.
3) Measure the width of the black background at the lead edge and at the rear edge.



La: Lead edge black background width
Lb: Rear edge black background width

If the width (La) of the black background at the lead edge is equal that (Lb) at the rear edge, there is no need to execute the following procedures of 4) ~ 7).

4) Loosen the mirror base drive pulley fixing screw on the front frame side or on the rear frame side.



5)Tighten the mirror base drive pulley fixing screw.

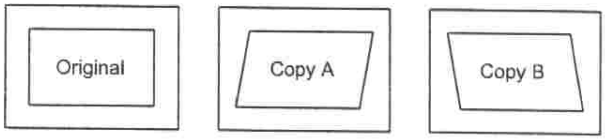
<Adjustment specification>

La = Lb

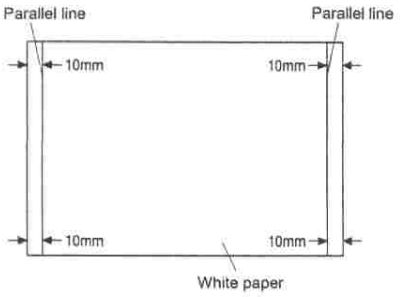
6) Execute the main scanning direction (FR) distartion balance adjustment previously described in 2) again.

(4) Sub scanning direction (scanning direction) distortion adjustment

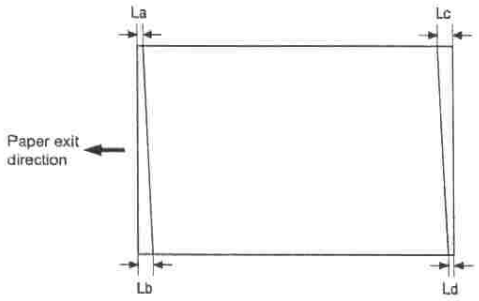
When there is no skew copy in the mirror base scanning direction and there is no horizontal error (right angle to the scanning direction), the adjustment can be made by adjusting the No. 2/3 mirror base unit rail height.
Before performing this adjustment, be sure to perform the horizontal image distortion adjustment in the laser scanner section.
This adjustment must be performed in the following cases:
•When the mirror base wire is replaced.
•When the copy lamp unit or No. 2/3 mirror unit is replaced.
•When the mirror unit rail is replaced or moved.
•When a following copy is made.



1) Making of a test sheet
Make test sheet by drawing parallel lines at 10mm from the both ends of A3 (11" x 17") white paper as shown below. (These lines must be correctly parallel to each other.)

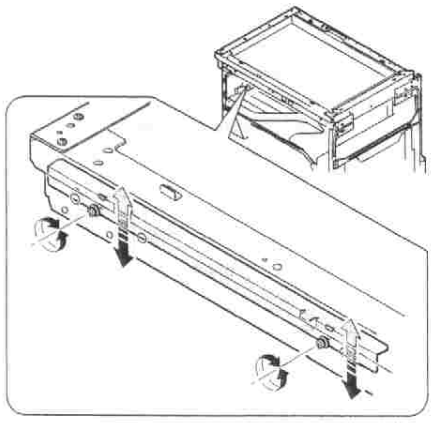


2) Make a normal (100%) copy of the test sheet on A3 (11" x 17") paper. (Fit the paper edge with the glass holding plate edge.)
3) Measure the distances (La, Lb, Lc, Ld) at the four corners as shown below.



When La = Lb and Lc = Ld, no need to perform the procedures 4) and 5).

4) Move the mirror base F rail position up and down (in the arrow direction) to adjust.



Note: If the rear side rail is used for the adjustment, the scanning position of the white balance sheet is shifted and "E7-04" may occur only when scanning with the SPF. Therefore it is advisable to use the front side rail for the adjustment.

- When La > Lb
  Shift the mirror base B rail upward by the half of the difference of La - Lb.
- When La < Lb
  Shift the mirror base B rail downward by the half of the difference of Lb - La.
  Example: When La = 12mm and Lb = 9mm, shift the mirror base B rail upward by 1.5mm.
- When Lc > Ld
  Shift the mirror base B rail downward by the half of the difference of Lc - Ld.
- When Lc < Ld
  Shift the mirror base B rail downward by the half of the difference of Ld - Lc.

* When moving the mirror base rail, hold the mirror base rail with your hand.

<Adjustment specification>

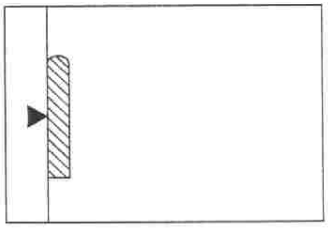
La = Lb, Lc = Ld

5) After completion of adjustment, manually turn the mirror base drive pulley, scan the mirror base A and mirror base B fully, and check that the mirror bases are not in contact with each other.
* If the mirror base rail is moved extremely, the mirror base may be in contact with the frame or the original glass. Be careful to avoid this.

(5) Main scanning direction (FR direction) magnification ratio adjustment (SIM 48-1)

Note: Before performing this adjustment, be sure to check that the CCD unit is properly installed.

1) Put a scale on the original table as shown below.



2) Execute SIM 48-1.
3) After warm-up, shading is performed and the current set value of the main scanning direction magnification ratio is displayed on the display section in 2 digits.
4) Select the mode and press the start key again.
5) Manual correction mode (TEXT lamp ON)
Enter the set value and press the start key.
The set value is stored and a copy is made.

<Adjustment specification>

Note: A judgment must be made with 200mm width, and must not be made with 100mm width.

Mode	Specification	SIM	Set value	Set range
Main scanning direction magnification ratio	At normal: ±1.0%	SIM 48-1	Add 1:0.1% increase Reduce 1: 0.1% decrease	1 ~ 99

(6) Sub scanning direction (scanning direction) magnification ratio adjustment (SIM 48-1, SIM 48-5)

a. OC mode in copying (SIM48-1)

Note: Before performing this adjustment, be sure to check that the CCD unit is properly installed.

1) Put a scale on the original table as shown below, and make a normal (100%) copy.
2) Compare the scale image and the actual image. If necessary, perform the following adjustment procedures.
3) Execute SIM 48-1.<<PHOTO>>
4) After warm-up, shading is performed and the current set value of the main scanning direction magnification ratio is displayed on the display section in 2 digits.
5) When the photo lamp is lighted by pressing the density selection key, the current magnification ratio correction value in the sub scanning direction is displayed in lower 2 digits of the display section.
6) Enter the set value and press the start key.
   The set value is stored and a copy is made.

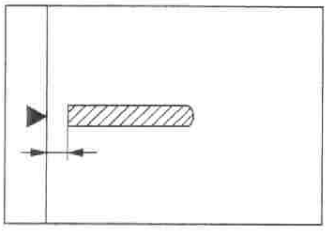
<Adjustment specification>

Mode	Specification	SIM	Set value	Set range
Sub scanning direction magnification ratio (OC mode)	Normal ±1.0%	SIM 48-1 (PHOTO)	Add 1:0.1% increase Reduce 1: 0.1% decrease	1 ~ 99

b. SPF sub scanning direction magnification ratio (SIM48-5)

Note:
- Before performing this adjustment, be sure to check that the CCD unit is properly installed.
- Before performing this adjustment, the OC mode adjustment in copying must be completed.

1) Put a scale on the original table as shown below, and make a normal (100%) copy to make a test chart.



Note: Since the printed copy is used as a test chart, put the scale in parallel with the edge lines.

2) Set the test chart on the SPF and make a normal (100%) copy.
3) Compare the scale image and the actual image. If necessary, perform the following adjustment procedures.
4) Execute SIM 48-5.
5) After warm-up, shading is performed.
   The auto density lamp lights up and the current front surface sub scanning direction magnification ratio correction value is displayed in two digits on the display section.
6) Enter the set value and press the start key.
   The set value is stored and a copy is made.

<Adjustment specification>

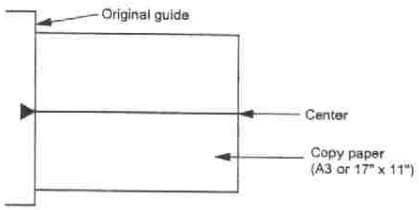
Mode	Specification	SIM	Set value	Set range
Sub scanning direction magnification ratio (SPF mode)	Normal ±1.0%	SIM 48-5	Add 1:0.1% increase Reduce 1: 0.1% decrease	1 ~ 99

(7) Off center adjustment (SIM 50-12)

a. OC mode (SIM50-12)

1) Make a test chart as shown below and set it so that its center line is fit with the original guide center mark.

* To make a test chart, draw a line on A3 or 11" x 17" paper at the center in the paper transport direction.



2) Make a normal copy from the manual paper feed tray, and compare the copy and the test chart.
   If necessary, perform the following adjustment procedures.
3) Execute SIM 50-12.
4) After warm-up, shading is performed and the current set value of the off center adjustment is displayed on the display section in 2 digits.
5) Enter the set value and press the start key.
   The set value is stored and a copy is made.

<Adjustment specification>

Mode	Specification	SIM	Set value	Set range
Original off center mode (OC mode)	Single: Center ±2.0mm	SIM 50-12 (AE lamp ON)	Add 1: 0.1mm shift to R side Reduce 1: 0.1mm shift to L side	1 ~ 99

b. SPF original off-center adjustment (SIM50-12)

Note: Before performing this adjustment, be sure to check that the paper off center is properly adjusted.

1) Make a test chart for the center position adjustment and set it on the SPF.

<Adjustment specification>

Draw a line on a paper in the scanning direction.

2) Make a normal copy from the manual paper feed tray, and compare the copy and the original test chart.
   If necessary, perform the following adjustment procedures.
3) Execute SIM 50-12.
4) After warm-up, shading is performed and the current set value of the off center adjustment at each paper feed port is displayed on the display section in 2 digits.
5) Enter the set value and press the start key.
   The set value is stored and a copy is made.

<Adjustment specification>

Mode	Specification	SIM	Set value	Set range
Original off center mode (SPF mode)	Single: Center ±3.0mm(TEXT lamp)	SIM 50-12	Add 1: 0.1mm shift to R side Reduce 1: 0.1mm shift to L side	1 ~ 99

(8) SPF white correction pixel position adjustment(SIM63-7) (required in an SPF model when replacing the lens unit)

1) Fully open the SPF.
2) Execute SIM 63-7.
3) When the operation panel displays "COMPLETE,"the adjustment is completed.
4) If the operation panel displays "ERROR,"perform the following measures.

•When the display is 0:

Check that the SPF is open.

Check that the lamp is ON.(If the lamp is OFF,check the MCU connector.)

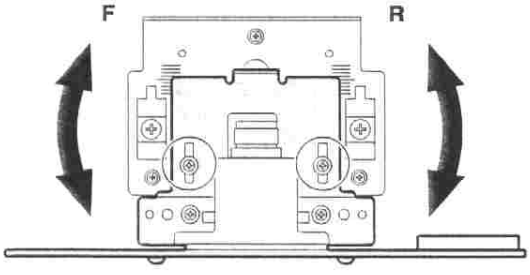
Check that the CCD harness is properly inserted into the MCU connector.

•When the display is 281 or above:

1) Remove the table glass.
2) Remove the dark box.
3) Slide the lens unit toward the front side and attach it,then execute SIM.

•When the display is 143 or below:

1) Remove the table glass.
2) Remove the dark box.
3) Slide the lens unit toward the rear side and attach it,then execute SIM.

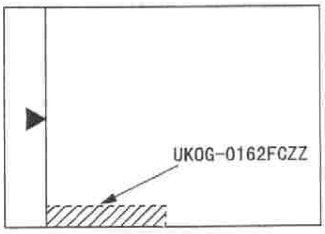


* When the lens unit is moved,execute the OC main scanning magnification ratio auto adjustment,SIM 48-1-1,IM48-3 and the PF original off-center adjustment.
* This adjustment is basically O.K.with IM 63-7.

C.Image density adjustment

(1)Copy mode (SIM 46-1)

1)Set a test chart (UKOG-0162FCZZ) on the OC table as shown below.



2) Put several sheets of A3 or 11" x 17" white paper on the test chart.
3) Execute SIM 46-1.
4) After warm-up, shading is performed and the current set value of the density level is displayed on the display section in 2 digits.
   For mode selection, use the density select key.
5) Change the set value with the 10-key to adjust the copy image density.
6) Make a copy and check that the specification below is satisfied.

<Adjustment specification>

Density mode	Display lamp	Exposure level	Sharp Gray Chart output	Set value	Set range
Auto	Auto	-	"2" is slightly copied.	The greater the set value is the greater the density is The smaller the set value is the smaller the density is.	1 ~ 99
Text	Text	3	"3" is slightly copied.		
Photo	Photo	3	"2" is slightly copied.		
Toner save	Text/ Photo	3	"3" is slightly copied		
Toner save	Auto/ Photo	-	"2" is slightly copied		

[7] SIMULATIONS

1. Entering the simulation mode

Perform the following procedure to enter the simulation mode.
"#" key → Interrupt key → "C" key → Interrupt key →
Main code → Start key → Sub code → Start key

2. Canceling the simulation mode

When the clear all key is pressed, the simulation mode is cancelled.
When the interruption key is pressed, the process is interrupted and the screen returns to the sub code entering display.

* After canceling the simulation mode, be sure to turn OFF/ON the power and check the operation.

Note: If the machine is terminated by a jam error or paper empty during copying in the adjustment by the simulation, recopying is required.

3. List of simulations

Main code	Sub code	Contents
01	01	Mirror scanning operation
	02	Mirror home position sensor (MHPS) status display
	06	Mirror scanning operation aging
02	01	Single paper feeder (SPF) aging
	02	SPF sensor status display
	03	SPF motor operation check
	08	SPG paper feed solenoid operation check
	11	SPF PS release solenoid operation check
05	01	Operation panel display check
	02	Fusing lamp and cooling fan operation check
	03	Copy lamp lighting check
06	01	Paper feed solenoid operation check
	02	Resist roller solenoid operation check
	10	Cassette semi-circular roller cleaning
07	01	Warm-up display and aging with jam
	06	Intermittent aging
	08	Shifting with warm-up display
08	01	Developing bias output
	02	Main charger output (Grid = HIGH)
	03	Main charger output (Grid = LOW)
	06	Transfer charger output
10	-	Toner motor operation
14	-	Trouble cancel (except for U2)
16	-	U2 trouble cancel
20	01	Maintenance counter clear
21	01	Maintenance cycle setting
22	01	Maintenance counter display
	02	Maintenance preset display
	03	Jam memory display
	04	Jam total counter display
	05	Total counter display
	08	SPF counter display
	09	Paper feed counter display
	12	Drum counter display
	13	CRUM type display
	14	P-ROM version display
22	15	Trouble memory display
	17	Copy counter display
	18	Printer counter display
	21	Scanner counter display
	22	SPF jam counter display
24	01	Jam total counter clear
	02	Trouble memory clear
	04	SPF counter clear
	06	Paper feed counter clear
	07	Drum counter clear
	08	Copy counter clear
	09	Printer counter clear
	13	Scanner counter clear
	14	SPF jam total counter clear
25	01	Main motor operation check
	10	Polygon motor operation check
26	02	Size setting
	03	Auditor setting
	05	Count mode setting
	06	Destination setting
	07	Machine condition check (CPM)
	18	Toner save mode setting
	30	CE mark conformity control ON/OFF
	31	Auditor mode exclusive setup
	36	Cancel of stop at maintenance life over
	38	Cancel of stop at drum life over
	39	Memory capacity check
	42	Transfer ON/OFF timing control setting
	43	Side void amount setting
	51	Copy temporary stop function setting
30	01	Paper sensor status display
42	01	Developing counter clear
43	01	Fusing temperature setting
	12	Standby mode fusing fan rotation setting
	13	Fusing paper interval control allow/inhibit setting
44	34	Transfer current setting
	40	Setting of rotation time before toner supply
46	01	Copy density adjustment (300dpi)
	02	Copy density adjustment (600dpi)
	09	Copy exposure level adjustment, individual setting (Text) 300dpi
	10	Copy exposure level adjustment, individual setting (Text) 600dpi
	11	Copy exposure level adjustment, individual setting (Photo) 600dpi
	18	Image contrast adjustment (300dpi)
	19	Exposure mode setting (Gamma table setting/AE operation mode setting/ Photo image process setting)
	20	SPF exposure correction
	29	Image contrast adjustment (600dpi)
	30	AE limit setting
	31	Image sharpness adjustment
48	01	Main scanning magnification ratio adjustment
	05	SPF mode sub scanning magnification ratio adjustment in copying
49	01	Flash ROM program writing mode
	12	Standby mode fusing fan RPM setting

Main code	Sub code	Contents
50	01	Image lead edge adjustment
	06	Copy lead edge position adjustment (SPF)
	10	Paper off-center adjustment
	12	Document off-center adjustment
51	02	Resist amount adjustment
53	08	SPF scanning position automatic adjustment
	10	SPF scan position change-over setting
61	03	HSYNC output check
63	01	Shading check
	07	SPF automatic correction
64	01	Self print

4. Contents of simulations

<table>
<tr><th>Main code</th><th>Sub code</th><th>Contents</th><th>Details of operation</th></tr>
<tr><td>01</td><td>06</td><td>Mirror scanning operation aging</td><td>When the [START] key is pressed, the mirror base performs A3(11" x 17") full scanning at the set magnification ratio speed. During scanning, the set magnification ratio is displayed. After 3 seconds, the mirror base performs full scanning again. During scanning, the set magnification ratio is displayed.
* When the [START] key is pressed again, the ready lamp turns and remains off.
The DV replacement/OPC drum cartridge replacement lamp displays the status of the mirror home position sensor. (The lamp lights up when the mirror is in the home position.)
During aging, the copy lamp lights up. When the [Interrupt] key is pressed, the operation is interrupted if operating, and the machine goes into the sub code input standby mode.</td></tr>
<tr><td>02</td><td>01</td><td>Single paper feeder (SPF) aging</td><td>When the [START] key is pressed, the set magnification ratio is acquired and document transport operation of single surface is performed in the case of SPF. During operation, the LED on the display section corresponding to the selected magnification ratio lights up, and the magnification ratio is displayed on the 7-seg display. When the [Interrupt] key is pressed at that time, the machine goes to the sub code input standby mode. When the [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>02</td><td>SPF sensor status display</td><td>(In order to receive the sensor change notification, the load must be decreased.)
The sensor status (ON/OFF) in the SPF can be checked with the following lamps.
When a sensor detects paper, it turns on. The open/close detection sensor turns on when the machine is opened.
<table>
<tr><th>Display lamp</th><th>Sensor</th></tr>
<tr><td>Toner supply lamp</td><td>SPF document set sensor</td></tr>
<tr><td>Copier jam lamp</td><td>SPF document transport sensor</td></tr>
<tr><td>The DV replacement/OPC drum cartridge replacement lamp</td><td>SPF unit (OC cover) open/close sensor</td></tr>
<tr><td>Paper empty lamp</td><td>SPF paper exit sensor</td></tr>
<tr><td>SPF jam lamp</td><td>SPF paper feed cover open/close sensor</td></tr>
<tr><td>Manual paper feed lamp</td><td>SPF paper length sensor 1</td></tr>
<tr><td>Tray jam lamp</td><td>SPF paper length sensor 2</td></tr>
<tr><td>AE lamp</td><td>SPF paper feed width sensor (small)</td></tr>
<tr><td>TEXT lamp</td><td>SPF paper feed width sensor (middle)</td></tr>
<tr><td>PHOTO lamp</td><td>SPF paper feed width sensor (large)</td></tr>
</table>
When the [Interrupt] key is pressed, the machine goes to the sub code input standby mode.
When the [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td>06</td><td>01</td><td>Paper feed solenoid operation check</td><td>When this simulation is executed, the sub code is displayed on the 7-seg LED and the lamp corresponding to the solenoid lights up.
Select a solenoid with the tray select key (the lamp corresponding to the solenoid lights up) and press the [START] key, and the machine repeats operation of ON for 500ms and OFF for 500ms. This operation is repeated 20 times.
After that, the machine goes into the sub code entry standby mode.
When [INTERRUPT] key is pressed during the process, the machine goes into the sub code input standby mode. When [CA] key is pressed, the simulation is terminated.
<table>
<tr><th>Display lamp</th><th>Solenoid</th></tr>
<tr><td>Main cassette lamp</td><td>Main cassette paper feed solenoid</td></tr>
<tr><td>Manual paper feed lamp</td><td>Manual paper feed solenoid</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Main code</th><th>Sub code</th><th>Contents</th><th>Details of operation</th></tr>
<tr><td>06</td><td>02</td><td>Resist roller solenoid operation check</td><td>When the [START] key is pressed in the sub code input state, the resist solenoid (RRS) turns ON for 500ms and OFF for 500ms. This operation is repeated 20 times.
After completion of the process, the machine goes into the sub code input standby mode.
When [INTERRUPT] key is pressed during the process, the machine goes into the sub code input standby mode. When [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>10</td><td>Cassette semi-circular roller cleaning</td><td>First of all, remove the developer unit.
Enter the simulation code, specify the cassette to be cleaned with the tray select key, and press START button. The main motor rotates to move the cassette semi-circular roller by half circle and make the roller face downward.
After completion of cleaning, when INTERRUPT key is pressed, the machine goes into the sub code entry standby mode and the roller returns to the original positions.
To clean another roller continuously, press INTERRUPT key to return the roller to the original position, and execute the simulation again.
During the operation, the sub code is displayed on the display.
* When CA key is pressed, the simulation mode is terminated.
However, the roller returns to the original position by the initial operation.</td></tr>
<tr><td>08</td><td>01</td><td>Developing bias output</td><td>When the [START] key is pressed, the developing bias signal is turned ON for 30 sec.
However, to calculate the actual output value is calculated, execute SIM25-01.
After completion of the process, the machine goes into the sub code input standby mode.
When [INTERRUPT] key is pressed during the process, the machine goes into the sub code input standby mode. When [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>02</td><td>Main charger output (Grid = HIGH)</td><td>When the [START] key is pressed, the main charger output is supplied for 30 sec in the grid voltage HIGH mode. After completion of the process, the machine goes into the sub code input standby mode.
When [INTERRUPT] key is pressed during the process, the machine goes into the sub code input standby mode. When [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>03</td><td>Main charger output (Grid = LOW)</td><td>When the [START] key is pressed, the main charger output is supplied for 30 sec in the grid voltage LOW mode. After completion of the process, the machine goes into the sub code input standby mode.
When [INTERRUPT] key is pressed during the process, the machine goes into the sub code input standby mode. When [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>06</td><td>Transfer charger output</td><td>Select an output mode with the [Mode select] key and press the [START] key. The transfer charger output is delivered for 30 sec in the selected mode.
After 30 sec of transfer charger output, the machine goes into the sub code entry standby mode.
When [INTERRUPT] key is pressed during the process, the machine goes into the sub code input standby mode. When [CA] key is pressed, the simulation is terminated.
<table>
<tr><th>Display lamp</th><th>Output mode</th></tr>
<tr><td>AE mode lamp</td><td>Normal size width: Front surface</td></tr>
<tr><td>AE mode lamp & PHOTO mode lamp</td><td>Small size width: Front surface</td></tr>
<tr><td>AE & TEXT & PHOTO mode lamp</td><td>Manual paper feed mode</td></tr>
</table>
•Small size is Letter R (A4R) or smaller.</td></tr>
<tr><td>21</td><td>1</td><td>Maintenance cycle setting</td><td>The current set maintenance cycle code is displayed (initial display), and the set data are stored.
<table>
<tr><th>Code</th><th>Setting</th></tr>
<tr><td>0</td><td>150,000 sheets * Default</td></tr>
<tr><td>1</td><td>Free (999,999 sheets)</td></tr>
</table></td></tr>
<tr><td>22</td><td>01</td><td>Maintenance counter display</td><td>The maintenance counter value is displayed. (Alternate display by 3 digits)</td></tr>
<tr><td></td><td>04</td><td>Jam total counter display</td><td>The jam total counter value is displayed. (Alternate display by 3 digits)</td></tr>
<tr><td></td><td>05</td><td>Total counter display</td><td>The total counter value is displayed. (Alternate display by 3 digits)</td></tr>
<tr><td></td><td>08</td><td>SPF counter display</td><td>The SPF counter value is displayed. (Alternate display by 3 digits)</td></tr>
<tr><td></td><td>13</td><td>CRUM destination display</td><td>When this simulation is executed, the CRUM destination set (written) in the CRUM chip is displayed.
If the display does not match the destination code saved in the CRUM chip, it is judged as an error.
*This simulation is valid only for the models where the CRUM is valid.
<table>
<tr><th>7-seg display</th><th>Meaning (CRUM destination)</th><th>7-seg display</th><th>Meaning (CRUM destination)</th></tr>
<tr><td>00</td><td>Not set yet</td><td>04</td><td>BTA-E</td></tr>
<tr><td>01</td><td>BTA-A</td><td>12</td><td>AL series</td></tr>
<tr><td>02</td><td>BTA-B</td><td>11</td><td>AR-5316(for SEC)</td></tr>
<tr><td>03</td><td>BTA-C</td><td></td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Main code</th><th>Sub code</th><th>Contents</th><th>Details of operation</th></tr>
<tr><td>22</td><td>14</td><td>P-ROM version display</td><td>The P-ROM version is displayed on the copy quantity display. The main code and the sub code are alternatively displayed by 2 digits. The display interval is same as that of the counter display.
By pressing the fixed magnification ratio key, each version display is switched.
<table>
<tr><th>Display lamp (AB series)</th><th>Display lamp (Inch series)</th><th>Displayed version</th></tr>
<tr><td>141%</td><td>141%</td><td>Machine program</td></tr>
</table></td></tr>
<tr><td></td><td>17</td><td>Copy counter display</td><td>The copy counter value is displayed. (Alternate display by 3 digits) When the [Interrupt] key is pressed, the machine goes into the sub code input standby mode. When the [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>18</td><td>Printer counter display</td><td>The printer counter value is displayed. (Alternate display by 3 digits)When the [Interrupt] key is pressed, the machine goes into the sub code input standby mode. When the [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>21</td><td>Scanner counter display</td><td>The scanner counter value is displayed. (Alternate display by 3 digits)When the [Interrupt] key is pressed, the machine goes into the sub code input standby mode. When the [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td></td><td>22</td><td>SPF jam counter display</td><td>The SPF jam counter value is displayed. (Alternate display by 3 digits)When the [Interrupt] key is pressed, the machine goes into the sub code input standby mode. When the [CA] key is pressed, the simulation is terminated.</td></tr>
<tr><td>30</td><td>01</td><td>Paper sensor status display</td><td>The paper sensor status is displayed with the lamps on the operation panel.
* When each sensor detects paper, the corresponding lamp turns on.
<table>
<tr><th>Display lamp</th><th>Sensor name</th></tr>
<tr><td>Developer lamp</td><td>Paper exit sensor</td></tr>
<tr><td>Toner lamp</td><td>Paper entry sensor</td></tr>
<tr><td>Manual paper feed lamp</td><td>Manual feed paper empty sensor</td></tr>
<tr><td>No. 1 cassette lamp</td><td>No. 1 tray paper empty sensor</td></tr>
<tr><td>Zoom lamp</td><td>New drum detect sensor</td></tr>
</table></td></tr>
<tr><td>44</td><td>34</td><td>Transfer current setting</td><td>Used to set the transfer current for the front surface and that for the back surface. When this simulation is executed, the current set value is displayed on the 7-seg display. Select the set value with the zoom (Up/Down) keys and press the [START] key, and the set content is written into the EEPROM and the machine goes into the sub code input standby mode. Press the [Mode select] key to select each setting mode. At that time, the setup content is written into the EEPROM.
The set range is 90uA ~ 360uA in the increment of 10uA.
<table>
<tr><th>Display lamp</th><th>Setting mode</th></tr>
<tr><td>AE mode lamp</td><td>Normal size width: Front</td></tr>
<tr><td>AE mode lamp & PHOTO mode lamp</td><td>Small size width: Front</td></tr>
<tr><td>AE & TEXT & PHOTO mode lamps</td><td>Manual paper feed</td></tr>
</table>
* Small size paper must be Letter R (A4R) or smaller.
* For the special size of tray, use the normal size width.</td></tr>
</table>

<table>
<tr><th>Main code</th><th>Sub code</th><th>Contents</th><th>Details of operation</th></tr>
<tr><td>46</td><td>19</td><td>Exposure mode setting (Gamma table setting / AE operation mode setting / PHOTO image process setting)</td><td>
Used set for the following three exposure mode. Enter a code number and press the [START] key, and the entered number is written into the EEPROM and the machine goes into the sub code entry standby mode. (When the [Copy mode select] key is pressed, the number is written into the EEPROM and the set item is changed.)
<<Gamma table setting>>
When this simulation is executed, the current set code number of gamma table is displayed. (Default: Japan -1. EX Japan -2)
* When setting the gamma table, no "Mode lamps" are lighted.
<table>
<tr><th>Code number</th><th>Setting (Gamma table)</th></tr>
<tr><td>1</td><td>Image quality priority mode * Default for Japan models</td></tr>
<tr><td>2</td><td>Toner consumption priority mode * Default for EX Japan models</td></tr>
</table>
* If this setting is changed, the set content of SIM46-30 is reset to the default.
<<AE mode>>
When the [Copy mode select] key is pressed in gamma table setting, the mode is changed to the AE operation mode setting and the current set code number of the AE operation mode is displayed. (Default: 0)
* When setting the AE operation mode, the "AE mode lamp" is lighted.
<table>
<tr><th>Code number</th><th>Setting (AE operation mode)</th></tr>
<tr><td>0</td><td>Lead edge stop * Default</td></tr>
<tr><td>1</td><td>Rear time process</td></tr>
</table>
<Photo image process setting>
When the [Copy mode select] key is pressed during the AE operation mode setting, the setting mode is changed to the photo image process setting and the currently set code number of the photo image process setting is displayed.
* When in the photo image process setting, the [Photo mode lamp] is lighted.
<table>
<tr><th>Code number</th><th>Setting (Photo image process setting)</th></tr>
<tr><td>1</td><td>Error diffusion process * Default</td></tr>
<tr><td>2</td><td>Dither process</td></tr>
</table>
* When this setting is changed, SIM 46-1/2/18/29 and SIM 46-31 Photo items are reset to the default. (SIM 46-11 is also linked.)
</td></tr>
<tr><td>49</td><td>01</td><td>Flash ROM program writing mode</td><td>
(Operating procedure)
When this simulation is executed, "d" is displayed on the copy quantity display and the machine enters the Flash ROM program writing mode. Use the writing tool on the PC to write the program. During writing, the display is made as follows. After completion of downloading, turn OFF/ON the power to reset.
<table>
<tr><th>Status</th><th>Copy quantity display</th><th>Pre-heat lamp</th><th>Ready lamp</th></tr>
<tr><td>Download data reception</td><td>"d"</td><td>ON</td><td>OFF</td></tr>
<tr><td>Data delete start</td><td>"d"</td><td>ON</td><td>ON</td></tr>
<tr><td>Data writing (Boot section)</td><td>"d"</td><td>Flash</td><td>OFF</td></tr>
<tr><td>Data writing (Program section)</td><td>"d"</td><td>Flash</td><td>Flash</td></tr>
<tr><td>Sum check</td><td>"d"</td><td>ON</td><td>ON</td></tr>
<tr><td>Completion of downloading</td><td>"OFF"</td><td>OFF</td><td>OFF</td></tr>
<tr><td>Error status</td><td>"*E"</td><td>OFF</td><td>OFF</td></tr>
</table>
* "*" in the error display indicates the error position.
<table>
<tr><td>00 Data receive error</td><td>07 Sum check error (Program section)</td></tr>
<tr><td>02 FLASH ROM delete error</td><td>08 Sum check error (EEPROM section)</td></tr>
<tr><td>03 FLASH ROM write error (Boot section)</td><td>09 E2PROM verify error</td></tr>
<tr><td>04 FLASH ROM write error (Program section)</td><td>0b E2PROM verify error</td></tr>
<tr><td>05 Sum check error (Loader section)</td><td>0F Download data length error</td></tr>
<tr><td>06 Sum check error (Boot section)</td><td></td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Main code</th><th>Sub code</th><th>Contents</th><th>Details of operation</th></tr>
<tr><td>49</td><td>12</td><td>Standby mode fusing fan RPM setting</td><td>When this simulation is executed, the currently set code number is displayed.
When [MODE SELECT] key is pressed, the normal setting and the high fusing temperature setting are switched alternatively.
Enter the code number and press START key, and the number is written into the EEPROM and the machine goes into the sub code entry standby mode.
<table>
<tr><th>Display lamp</th><th>Setting mode</th><th>Default</th></tr>
<tr><td>AE mode lamp</td><td>Normal temperature control (190°C or less)</td><td>Low speed rotation</td></tr>
<tr><td>TEXT mode</td><td>Fusing temperature of 190°C or above</td><td>High speed rotation</td></tr>
</table>
<table>
<tr><th>Code number</th><th>Setting</th></tr>
<tr><td>0
1</td><td>Low speed rotation
High speed rotation</td></tr>
</table></td></tr>
<tr><td>51</td><td>02</td><td>Resist amount adjustment</td><td>Used to adjust the contact pressure of the machine resist roller and the SPF resist roller onto the paper.
(Operating procedure)
When this simulation is executed, the current set value is displayed.
When the exposure mode key is pressed, the following set items are changed sequentially. Enter an adjustment value with the 10-key and press the [START] key, and the entered value will be saved and a copy will be made. (Adjustment range: 1 ~ 99, Default: 50)
When the [CA] key is pressed, the entered value is saved and the simulation is terminated.
<table>
<tr><th>Lighting lamp</th><th>Adjustment mode</th></tr>
<tr><td>AE, Main cassette lamp
AE, Manual paper feed lamp
AE, TEXT, PHOTO lamps</td><td>Main cassette paper feed
Manual paper feed
★ SPF document feed</td></tr>
</table>
★ Supported for the installed models only. Skipped for the models without installation.</td></tr>
<tr><td>53</td><td>10</td><td>SPF scan position change-over setting</td><td>Used to change over the scan position depending on that the SPF unit and the SPF document glass holder section are of anti-dirt glass or not.
When this simulation is executed, the currently set code number is displayed.
Enter the code number corresponding to the SPF unit to be used and press [START] key, and the setting will be changed over.
<table>
<tr><th>Code No.</th><th>Mode</th></tr>
<tr><td>0</td><td>Set to the scan position of the current mass production SPF unit. (Default)</td></tr>
<tr><td>1</td><td>Set to the scan position of the ant-dirt SPF unit.</td></tr>
</table>
Though this setting is changed, the other set values are not affected. (The other set values remain unchanged.)
When replacing and installing the SPF unit, it is recommendable to use this simulation to set the scan position and execute the scan position automatic adjustment.</td></tr>
<tr><td>64</td><td>01</td><td>Self print</td><td>The optical system status is ignored and a self print is made. Also when a print command is sent from the host, printing is performed.
(Operating procedure)
When this simulation is executed, warm-up is performed and the ready lamp is lighted.
(However, the scanner is invalid and no initial operation is made.)
Enter the code number with the 10-key, and select a cassette with the cassette select key and press the [START] key. The selected cassette start paper feed and printing is performed in the selected pattern.
* Only the tray lamp and the online lamp are lighted, and no other lamps are lighted.
Printing is made in 1 by 2 mode, where one line is printed and the following two liens are not printed, or in the grid pattern.
<table>
<tr><th>Code number</th><th>Pattern</th></tr>
<tr><td>0
1
2
3</td><td>1 by 2
Grid pattern
White paper
Black background</td></tr>
</table>
* Input disable for 4 ~ 99
* Print data are made on A3(11" x 17") size. (A3(11" x 17") paper is preferable.)</td></tr>
</table>

[8] USER PROGRAMS

The user programs allow the parameters of certain functions to be set, changed, or canceled as desired.

1. List of user programs

This copier has the following user programs.

Program name	Program No	Description	Default	Parameters
Auto clear time	1	"Auto clear time" automatically returns the copy settings to the initial settings when a certain period of time elapses after a copy is made. This program is used to select the period of time. "Auto clear time" can also be disabled.	60sec	1 (OFF) 2 (10sec) 3 (20sec) 4 (60sec) 5 (90sec) 6 (120sec)
Preheat mode	2	This function automatically switches the machine to a low power consumption state if the set duration of time elapses without the machine being used when the power is on. The POWER SAVE indicator lights up, however, the keys on the operation panel can be used. Normal operation automatically resumes when a key on the operation panel is pressed, a print job is received or an original is placed.	1min	1 (1min) 2 (5min) 3 (30min) 4 (60min) 5 (120min) 6 (240min)
Auto power shut-off timer	3	This function automatically switches the machine to a state that consumes even less power than preheat mode if the set duration of time elapses without the machine being used when the power is on. All lights except the POWER SAVE indicator and ON LINE indicator go off. To resume normal operation, press the [START] key. Normal operation also resumes automatically when a print job is received or scanning is begun from a computer. While in auto power shut-off mode, no keys (except the [START] key) can be used.	5min	1 (5min) 2 (30min) 3 (60min) 4 (120min) 5 (240min)
Stream feeding mode *1	4	When copying using the SPF, during the period of time that the SPF indicator blinks after an original has been scanned (about 5 seconds), a subsequent original can be placed and automatically fed into the machine.	OFF	0 (OFF) 1 (ON)
Auto power shut-off setting	5	Use this setting to enable or disable auto power shut-off.	ON	0 (OFF) 1 (ON)
Auditing mode	10	Use to enable or disable "Auditing mode". "Auditing mode" is initially disabled.	OFF	0 (OFF) 1 (ON)
Account number entry	11	Use to set up account numbers. Up to 20 accounts can be established.	-	-
Account number change	12	Use to change an account number.	-	-
Account number deletion	13	Use to delete an account number. A single account number can be deleted, or all account numbers at once.	Delete single account	0 (Delete single account) 1 (Delete all accounts)
Number of copies per account	14	This displays the number of copies made by each account. The maximum count is 49,999. If this number is exceeded, the count will start over from 0.	-	-
Resetting account	15	Use to reset the copy count of an account to 0. The copy count of a single account or of all accounts can be reset.	Reset single account	0 (Reset single account) 1 (Reset all accounts)
Resolution in Auto/Text mode	23	This setting is used to change the copy resolution in AUTO and TEXT mode from 600 x 300 dpi to 600 x 600 dpi (high-quality mode). Scanning is slower when high-quality mode is used.	300dpi	1 (300dpi) 2 (600dpi)

*1 When the SPF is installed.

Program name	Program No	Description	Default	Parameters
Key auto repeat	25	Use this setting to select whether or not holding down a key causes repeated input of the key. For keys that normally cause a set value to increase when held down (for example, holding down the [ZOOM] key), this program can be used to have the set value not change when the key is held down.	ON	0 (OFF) 1 (ON)
Key press time	26	Use this setting to select how long a key must be pressed for the input to be accepted. By selecting a longer time, you can prevent settings from being changed by the accidental pressing of a key.	Minimum (current response speed)	1 (Minimum (current response speed)) 2 (0.5sec) 3 (1.0sec) 4 (1.5sec) 5 (2.0sec)
Audible signals volume	27	This sets the volume of beep signals.	short beep	1 (short beep) 2 (long beep) 3 (OFF)
Base setting beep signal	28	Use this to sound a beep when a base setting is selected.	OFF	0 (OFF) 1 (ON)
Number of copies limit	29	Use this setting to select 99 or 999 for the maximum number of copies.	999 copies	1 (99 copies) 2 (999 copies)
Use close paper size	30	When this function is enabled, printing in printer mode will automatically continue using a different size of paper if the specified size of paper runs out in all trays. This feature does not function in copy mode.	OFF	0 (OFF) 1 (ON)
Default tray setting	31	Use this program to select a default tray. This tray is automatically selected each time the power is turned on or each time the machine reverts to the initial settings.	Upper paper tray	1 (Tray 1) 5 (Bypass tray)
Default exposure mode	32	Use this program to set "AUTO", "TEXT", or "PHOTO" as the default exposure mode.	AUTO	1 (AUTO) 2 (TEXT) 3 (PHOTO)

[9]TROUBLE CODE LIST

1.Trouble code list

Main code	Sub code	Content
E1	00	IMC PWB communication trouble
	10	IMC PWB trouble
	11	IMC ASIC error
	13	IMC PWB flash ROM error
	16	IMC PWB DIMM memory read/write check error
	81	Interface error in communication with IMC PWB (Parity)
	82	Interface error in communication with IMC PWB (Overrun)
	84	Interface error in communication with IMC PWB (Framing)
E7	02	LSU trouble
	10	Shading trouble (Black correction)
	11	Shading trouble (White correction)
	12	Shading trouble
	16	Abnormal laser output
F2	04	Improper cartridge (destination error, life cycle error)
		Identification error
		Model error
		Type error
		Destination error
		Data abnormality
		Misc error
F5	02	Copy lamp lighting abnormality
H2	00	Thermistor open
H3	00	Heat roller high temperature detection
H4	00	Heat roller low temperature detection
L1	00	Scanner feed trouble
L3	00	Scanner return trouble
L4	01	Main motor lock detection
	11	Shifter motor trouble
L6	10	Polygon motor lock detection
L8	01	No full wave signal
U2	04	EEPROM read/write error (serial communication error)
	11	Counter check sum error (EEPROM)
	12	Adjustment value check sum error (EEPROM)
	40	CRUM chip communication error
--		Auditor NOT READY
CH ON	None	Side door open
CH Blink	None	Developing cartridge not installed

2.Details of trouble codes

Main code	Sub code		Details of trouble
E1	00	Content	IMC PWB communication trouble
		Detail	An abnormality occurs in communication between the MCU PWB and the IMC PWB.
		Cause	IMC PWB-MCU PWB harness abnormality MCU PWB connector disconnection IMC PWB ROM defect/data abnormality
		Check and remedy	Check connection of the connector and the harness between the IMC PWB and the MCU PWB. Check the ROM of the IMC PWB.
	10	Content	IMC PWB trouble
		Detail	An abnormality occurs in the IMC PWB.
		Cause	USB chip error/CODEC error on the IMC PWB
		Check and remedy	Replace the IMC PWB with a new one.
	11	Content	IMC ASIC error
		Detail	An abnormality occurs in the IMC PWB.
		Cause	Abnormality in ASIC on the IMC PWB
		Check and remedy	Replace the IMC PWB with a new one.
	13	Content	IMC PWB flash ROM error
		Detail	An abnormality occurs in the IMC flash ROM.
		Cause	IMC PWB abnormality
		Check and remedy	Replace the IMC PWB with a new one. If downloading of the program is abnormally terminated, it may cause an error. Download the program again to avoid this.
	16	Content	IMC PWB DIMM memory read/write check error
		Detail	An installation error occurs in the IMC expansion compression memory module. An error occurs during access to the IMC expansion compression memory.
		Cause	Improper installation of the IMC expansion memory module. IMC expansion memory module abnormality IMC expansion memory contact abnormality IMC PWB abnormality.
		Check and remedy	Check installation of the expansion memory module. Replace the expansion memory module. Replace the IMC PWB with a new one.
	81	Content	Interface error (Parity) in communication with the IMC PWB
		Detail	A parity error occurs in communication between the MCU PWB and the IMC PWB.
		Cause	IMC PWB-MCU PWB harness defect Improper connection of the MCU PWB connector IMC PWB ROM defect/data abnormality"
		Check and remedy	Check connection of the connector/harness between the IMC PWB and the MCU PWB. Check the ROM of the IMC PWB.

Main code	Sub code		Details of trouble
E1	82	Content	Interface error (Overrun) in communication with the IMC PWB
		Detail	An overrun error occurs in communication between the MCU PWB and the IMC PWB.
		Cause	IMC PWB-MCU PWB harness defect Improper connection of the MCU PWB connector IMC PWB ROM defect/data abnormality.
		Check and remedy	Check connection of the connector/harness between the IMC PWB and the MCU PWB. Check the ROM of the IMC PWB.
	84	Content	Interface error (Framing) in communication with the IMC PWB
		Detail	A framing error occurs in communication between the MCU PWB and the IMC PWB.
		Cause	IMC PWB-MCU PWB harness defect Improper connection of the MCU PWB connector IMC PWB ROM defect/data abnormality.
		Check and remedy	Check connection of the connector/harness between the IMC PWB and the MCU PWB. Check the ROM of the IMC PWB.
E7	02	Content	LSU trouble
		Detail	The BD signal from the LSU cannot be detected in a certain cycle. (Always OFF or always ON)
		Cause	LSU connector or LSU harness defect or disconnection Polygon motor rotation abnormality Laser beams are not generated. MCU PWB abnormality.
		Check and remedy	Check connection of the LSU connector. Execute SIM 61-03 to check the LSU operations. Check that the polygon motor rotates normally. Check that the laser emitting diode generates laser beams. Replace the LSU unit. Replace the MCU PWB.
	10	Content	Shading trouble (Black correction)
		Detail	The CCD black scan level is abnormal when the shading.
		Cause	Improper connection of the CCD unit flat cable CCD unit abnormality MCU PWB abnormality.
		Check and remedy	Check connection of the CCD unit flat cable. Check the CCD unit."

Main code	Sub code		Details of trouble
E7	11	Content	Shading trouble (White correction)
		Detail	The CCD white scan level is abnormal when the shading.
		Cause	Improper connection of the CCD unit flat cable Dirt on the mirror, the lens, and the reference white plate Copy lamp lighting abnormality CCD unit abnormality MCU PWB abnormality (When occurred in the SPF scan position.) Improper installation of the mirror unit
		Check and remedy	Clean the mirror, lens, and the reference white plate. Check the light quantity and lighting status of the copy lamp (SIM 05-03). Check the MCU PWB.
	12	Content	Shading trouble
		Detail	White correction is not completed in the specified number of operations.
		Cause	CCD unit flat cable connection failure. Dirt on mirrors, lenses, and the reference white plate. Copy lamp lighting abnormality CCD unit abnormality MCU PWB abnormality
		Check and remedy	Clean mirrors, lenses, and the reference white plate. Check the copy lamp light quantity (SIM 05-03) and lighting. Check the CCD unit. Check the MCU PWB.
	16	Content	Abnormal laser output
		Detail	When the laser output is stopped, HSYNC is detected.
		Cause	Laser abnormality MCU PWB abnormality.
		Check and remedy	Check the laser emitting diode operation. Replace the MCU PWB. "
F2	04	Content	Improper cartridge (Destination error, life cycle error)
		Detail	The destination of the machine differs from that of the CRUM. The life cycle information is other than "Not used (FFh)."
		Cause	CRUM chip defect Improper developing unit
		Check and remedy	Replace the CRUM chip. Replace the developing unit.
		Identification error	The trade mark code of the CRUM differs. The company code of the CRUM differs.
		Model error	The boot program model code does not coincide with the CRUM model code.
		Type error	When the CRUM type is other than genuine/ conversion/production rotation.
		Destination error	The machine destination differs from the CRUM destination.
		Data abnormality	When an error value is included in the initial check information. When the max. toner supply time is 00. When the print hard stop is 00.
		Misc error	When the Misc information is other than "Not used (FFh)."

Main code	Sub code		Details of trouble
F5	02	Content	Copy lamp lighting abnormality
		Detail	The copy lamp does not turn on.
		Cause	Copy lamp abnormality Copy lamp harness abnormality CCD PWB harness abnormality.
		Check and remedy	Use SIM 5-3 to check the copy lamp operations. **When the copy lamp lights up.** Check the harness and the connector between the CCD unit and the MCU PWB. **When the copy lamp does not light up.** Check the harness and the connector between the copy lamp unit and the MCU PWB. Replace the copy lamp unit. Replace the MCU PWB. "
H2	00	Content	Thermistor open
		Detail	The thermistor is open. The fusing unit is not installed.
		Cause	Thermistor abnormality Control PWB abnormality Fusing section connector disconnection The fusing unit is not installed.
		Check and remedy	Check the harness and the connector between the thermistor and the PWB. Use SIM 14 to clear the self diagnostic display.
H3	00	Content	Heat roller high temperature detection
		Detail	The fusing temperature exceeds 240C°.
		Cause	Thermistor abnormality Control PWB abnormality Fusing section connector disconnection.
		Check and remedy	Use SIM 5-02 to check the heater lamp blinking operation. **When the lamp blinks normally.** Check the thermistor and its harness. Check the thermistor input circuit on the control PWB. **When the lamp keeps ON.** Check the power PWB and the lamp control circuit on the MCU PWB. Use SIM 14 to clear the self diagnostic display.

Main code	Sub code		Details of trouble
H4	00	Content	Heat roller low temperature detection
		Detail	When the fusing temperature is lower than 150C° after 55sec from the start of warming up. When the warming up complete temperature is not reached in 30sec from reaching 150C°. When the fusing temperature is lower than 100C° after 20sec from ready start. When the fusing temperature is lower than 145C° when printing."
		Cause	Thermistor abnormality Heater lamp abnormality Thermostat abnormality Control PWB abnormality
		Check and remedy	Use SIM 5-02 to check the heater lamp blinking operation. **When the lamp blinks normally.** Check the thermistor and its harness. Check the thermistor input circuit on the control PWB. **When the lamp does not light up.** Check for disconnection of the heater lamp and the thermostat. Check the interlock switch. Check the power PWB and the lamp control circuit on the MCU PWB. Use SIM 14 to clear the self diagnostic display.
L1	00	Content	Scanner feed trouble
		Detail	The scanner does not complete feeding in the specified time.
		Cause	Mirror unit abnormality The scanner wire is disconnected. The origin detection sensor abnormality Mirror motor harness abnormality
		Check and remedy	Use SIM 1-1 to check the mirror reciprocating operations. **When the mirror does not feed.** Check for disconnection of the scanner wire. Check the harness and the connector between the mirror motor and the MCU PWB. Replace the mirror unit. Replace the MCU PWB. **When the mirror does feed.** Use SIM 1-2 to check the mirror home position sensor."
L3	00	Content	Scanner return trouble
		Detail	The scanner does not complete returning in the specified time. The mirror is not in the home position when OC copying is started with the mirror standby in the home position.
		Cause	Mirror unit abnormality Scanner wire disconnection Origin detection sensor abnormality Mirror motor harness abnormality
		Check and remedy	Use SIM 1-1 to check the mirror reciprocating operations. **When the mirror does not return.** Check for disconnection of the scanner wire. Check the harness and the connector between the mirror motor and the MCU PWB. Replace the mirror unit. Replace the MCU PWB. **When the mirror does feed.** Use SIM 1-2 to check the mirror home position sensor.

Main code	Sub code		Details of trouble
L4	01	Content	Main motor lock detection
		Detail	The main motor does not rotate. The motor lock signal is detected for 1sec or more after rotation of the main motor. The motor lock signal is detected for 1sec during rotation of the main motor.
		Cause	Main motor unit abnormality Improper connection or disconnection the main motor and the harness. MCU PWB abnormality
		Check and remedy	Use SIM 25-01 to check the main motor operations. Check connection of the main motor harness/ connector. Replace the main motor. Replace the MCU PWB.
	11	Content	Shifter motor trouble
		Detail	The shifter home position detection signal is not detected when initializing the shifter.
		Cause	Shifter motor abnormality, improper connection or disconnection of the harness, shifter home position sensor abnormality
		Check and remedy	Use SIM 03-11 to check the shifter motor operations. Check connection of the harness/connector of the shifter motor. Replace the shifter motor. Replace the MCU PWB.
L6	10	Content	Polygon motor lock detection
		Detail	The polygon motor does not rotate. The motor lock signal is detected for 6sec after rotation of the polygon motor. The motor lock signal is detected for 1sec during rotation of the polygon motor.
		Cause	Polygon motor unit abnormality Improper connection or disconnection of the polygon motor and the harness. MCU PWB abnormality
		Check and remedy	Use SIM 61-1 to check the polygon motor operations. Check connection of the polygon motor harness/connector. Replace the polygon motor.. Replace the MCU PWB.
L8	01	Content	No full wave signal
		Detail	The zero cross signal is not detected.
		Cause	Power unit abnormality MCU PWB abnormality
		Check and remedy	Check connection of the harness and connectors. Replace the MCU PWB. Replace the power unit.
U2	04	Content	EEPROM read/write error (Serial communication error)
		Detail	EEPROM access process error
		Cause	EEPROM abnormality
		Check and remedy	Check that the EEPROM is properly set. Use SIM 16 to cancel the trouble. Replace the MCU PWB.

Main code	Sub code		Details of trouble
U2	11	Content	Counter check sum error (EEPROM)
		Detail	Check sum error of the counter area in the EEPROM
		Cause	EEPROM abnormality
		Check and remedy	Check that the EEPROM is properly set. Use SIM 16 to cancel the trouble. Replace the MCU PWB.
	12	Content	Adjustment value check sum error (EEPROM)
		Detail	Check sum error of the adjustment value area in the EEPROM
		Cause	EEPROM abnormality
		Check and remedy	Check that the EEPROM is properly set. Use SIM 16 to cancel the trouble. Replace the MCU PWB.
	40	Content	CRUM chip communication error
		Detail	An error occurs during communication between the MCU and the CRUM chip.
		Cause	CRUM chip abnormality Developing unit disconnection MCU PWB abnormality
		Check and remedy	Replace the chip. Check installation of the developing unit. Use SIM 16 to cancel the trouble. Replace the MCU PWB.
--		Content	Auditor NOT READY
		Detail	
		Cause	
		Check and remedy	
CH ON	None	Content	Side door open
		Detail	The side door is open.
		Cause	Side door sensor abnormality MCU PWB abnormality
		Check and remedy	Check that all the side doors are closed. Replace the MCU PWB.
CH Blink	None	Content	Developing cartridge not installed
		Detail	The developing cartridge is not installed. Communication with the CRUM cannot be made in initial check of the CRUM.
		Cause	Developing unit disconnection MCU PWB abnormality CRUM chip abnormality
		Check and remedy	Check installation of the developing unit. Replace the MCU PWB.

[10] MAINTENANCE

1. Maintenance table

X:Check(Clean, adjust, or replace when required.)
O:Clean ▲:Replace △:Adjust ☆:Lubricate

Unit name	Part name		When calling
Optical section	Lamp unit	Reflector	O
		Mirror	O
	No.2/3 mirror unit	Mirror	O
		Pulley	X
	CCD peripheral	Lens	O
	Glass	Table glass	O
		White Plate	O
	Other	Drive wire	X
		Rail	X ☆
		Document cover	O
		Document size sensor	O
LSU		Dust-proof glass	O
Paper feed section	Multi paper feed section	Take-up roller (manual / SPF)	O
		Paper feed roller	O
		Spring clutch	O ☆
Paper transport section		PS roller	O
		Transport (paper exit) rollers	O
		Spring clutch	O ☆
Fusing section		Upper heat roller	O
		Pressure roller	O
		Pressure roller bearing	X
		Upper separation pawl	X
		Lower separation pawl	X
		Cleaning pad	X
Drive section		Gears	X ☆
		Belts	X
Paper exit section		Ozone filter	X

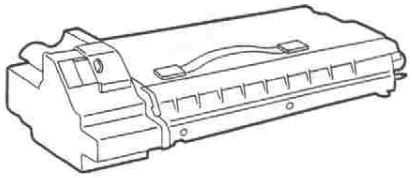
2. Maintenance display system

Toner	Life: 9K LED Near Empty: Illuminate Empty : Blink Machine Near Empty: Active (about 300 page remains) Empty: Stop
Drum	Life: 30K LED&Machine LED illuminate at 29K. After the LED illuminates, if another 1K copies are made the light will start blinking and the machine will stop. (Whether the machine will stop at 30K or not can be selected by service simulation setting.)
Maintenance	LED Illuminate at 150K. (for upper heat roller) Not illuminating can be selected by service man simulation setting. Default: illuminate at 150K Choice: 150K or Free(not illuminating) Machine Whether the machine will stop at 150K or not can be selected by service simulation setting. Default: Free (not stop) Choice: stop at 150K or Free

3. Note for replacement of consumable parts

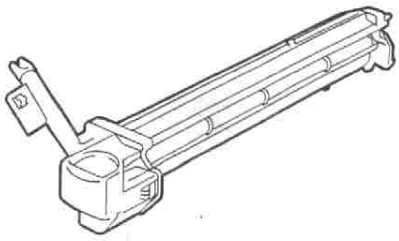
A. TD cartridge

When a waste toner cartridge is removed from the machine, it must be put in a polyethylene bag to avoid scattering of toner.



B. Drum cartridge

Do not shake or put up the developer cartridge. Otherwise developer may scatter.



[11]DISASSEMBLY AND ASSEMBLY

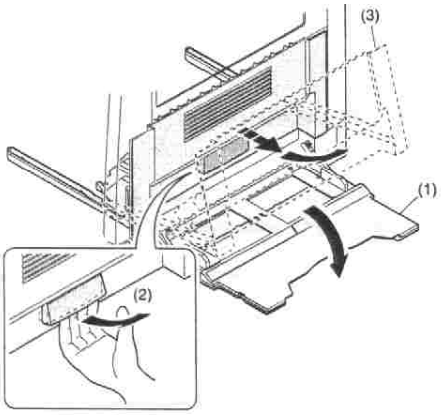
WARNING Before performing the disassembly procedure, be sure to remove the power cord to prevent against an electric shock.

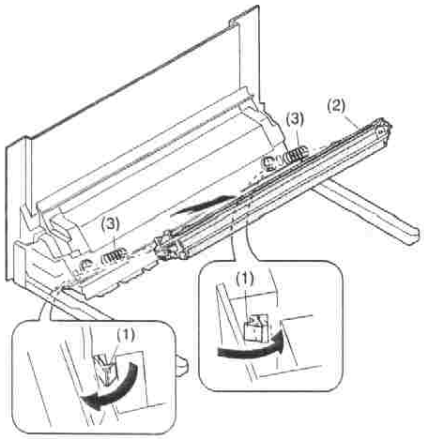
No.	Item
1	High voltage section
2	Optical section
3	Fusing section
4	Paper exit section
5	MCU
6	Optical frame unit
7	LSU
8	Tray paper feed section/Paper transport section
9	Manual multi paper feed section
10	Power section
11	Developing section
12	Process section
13	Others

1. High voltage section

No.	Content
A	Transfer charger unit
B	Charger wire

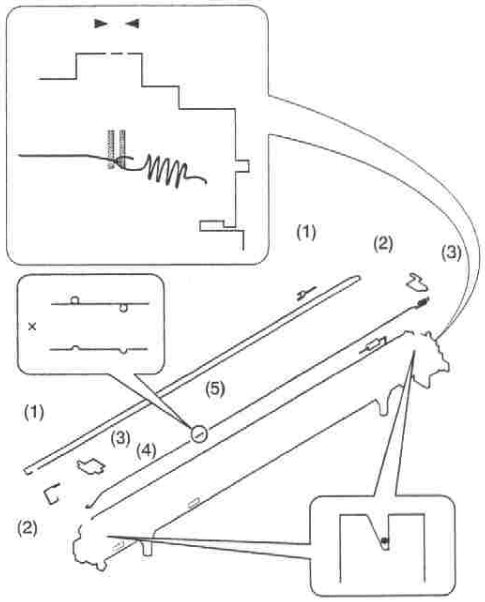
A.Transfer charger unit





B.Charger wire

Installation: The spring tip must be between two reference ribs.
•The charger wire must be free from twist or bending.
•Be sure to put the charger wire in the V groove.

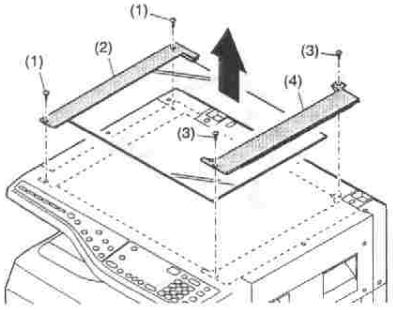


2.Optical section

Note: When disassembling or assembling the optical unit, be careful not to touch the mirror and the reflector.

No.	Content
A	Table glass
B	Copy lamp unit
C	Inverter PWB for copy lamp
D	Copy lamp
E	Lens unit
F	Wire

A.Table glass

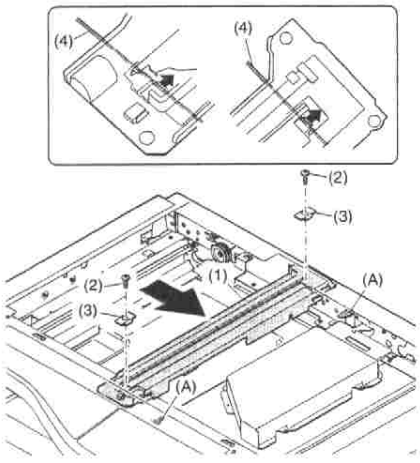


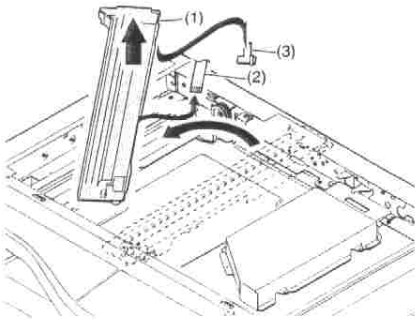
B.Copy lamp unit

Disassembly: Be sure to put No. 2/3 mirror unit to the positioning plate (A).

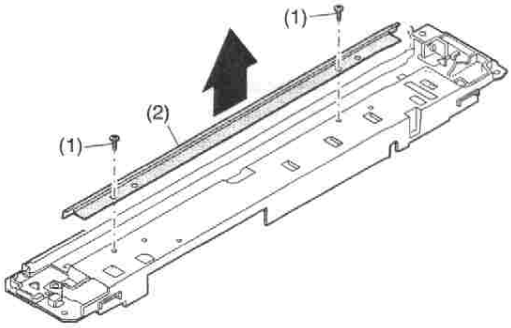
Assembly: Put the notched surface of wire holder (3) downward, tighten temporarily, and install.

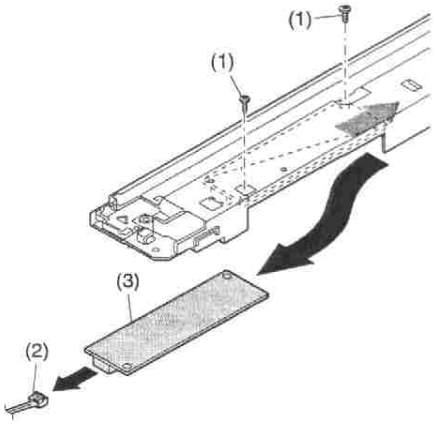
Adjustment: Main scanning direction distortion balance adjustment



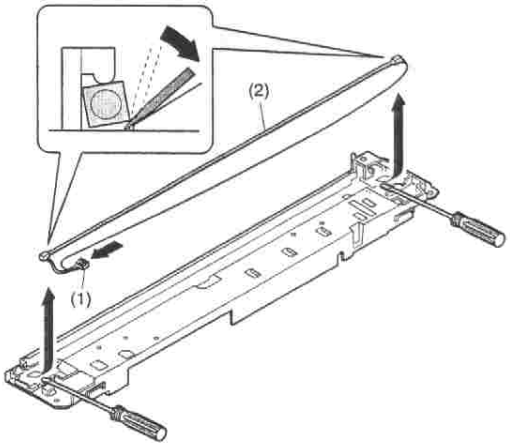


C.Inverter PWB for copy lamp





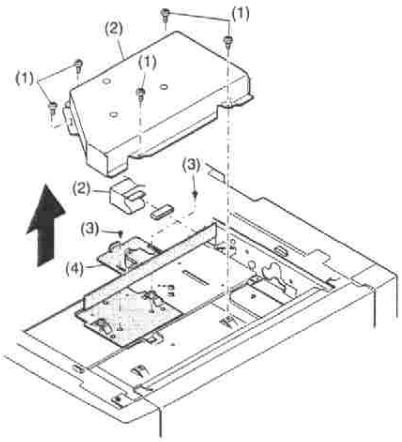
D.Copy lamp



E.Lens unit

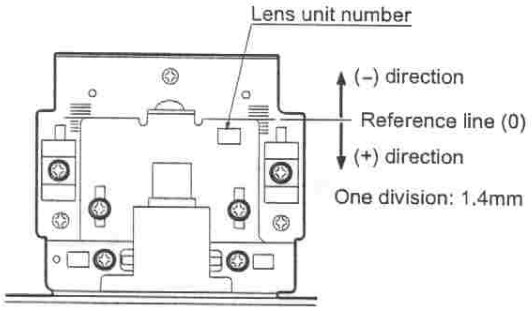
Note: Do not remove screws which are not indicated in the figure. If the height of the base plate is changed, it cannot be adjusted in the market.

Note: The CCD/lens unit is factory-adjusted before shipping. Since these adjustments cannot be performed in the market. Never touch the screws other than screw 2) of the CCD/lens unit.



Lens unit attachment

<1>Attach the lens unit so that the lens unit number on the lens adjustment plate is aligned with the scribe line on the base plate.



	CCD adjustment value
+4 scales	5.0~
+3 scales	3.6~4.9
+2 scales	2.2~3.5
+1 scale	0.8~2.1
Reference	-0.6~0.7
-1 scale	-2.0~ -0.7
-2 scales	-3.4~ -2.1
-3 scales	-4.8~ -3.5
-4 scales	~ -4.9

<2>Make a sample copy at the above position, and measure the magnification ratio.

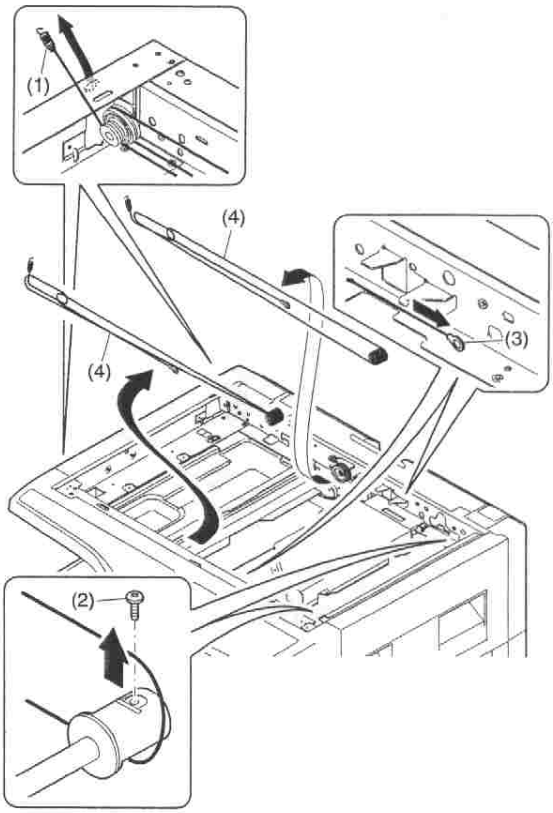
<3>Change the installing position in the horizontal direction to adjust the magnification ratio.

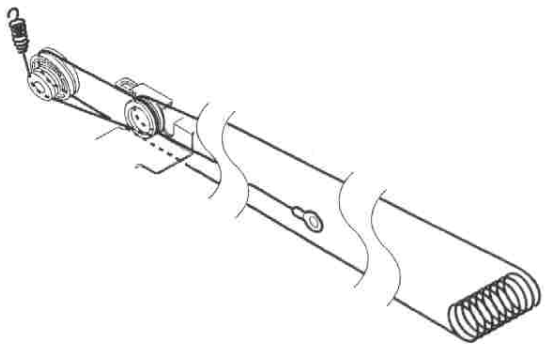
- When the copy image is longer than the original, shift to the positive (+) direction.
- When the copy image is shorter than the original, shift to the negative (-) direction.

* 1 scale of the scribed line corresponds to 0.34% of magnification ratio.

* If this adjustment is not satisfactory, make a fine adjustment with SIM 48-2.

F.Wire

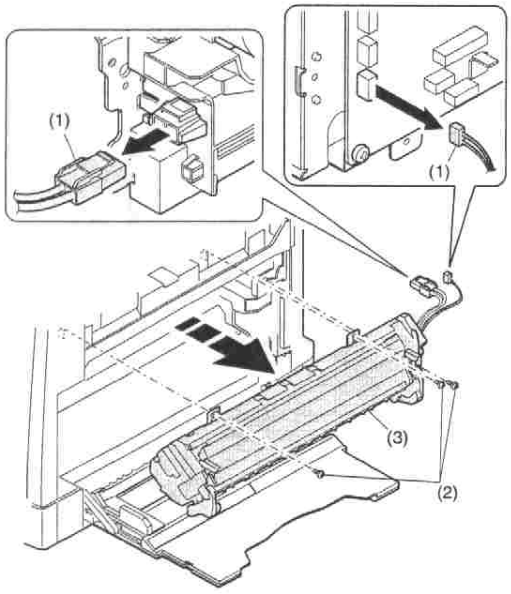




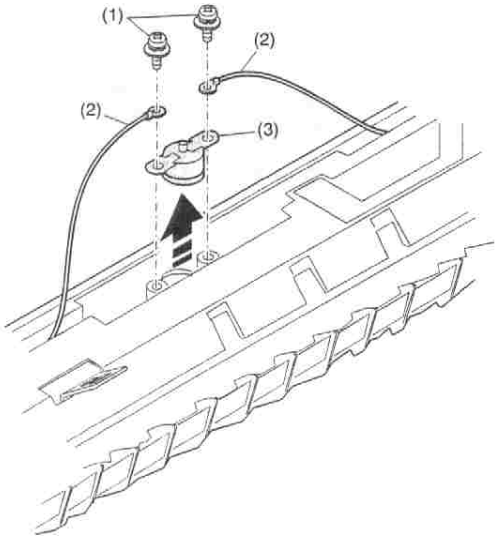
3.Fusing section

No.	Contents
A	Fusing unit
B	Thermostat
C	Thermistor
D	Heater lamp
E	Upper heat roller
F	Separation pawl
G	Lower heat roller
H	Separation pawl

A.Fusing unit removal

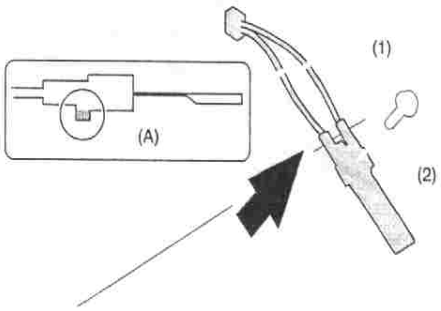


B.Thermostat



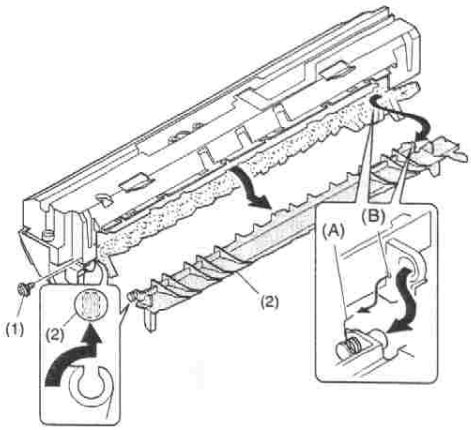
C.Thermistor

Installation: When installing the thermistor, be sure to face the installing projection (A) toward the installing surface.
Check that the thermistor is in contact with the upper heat roller.

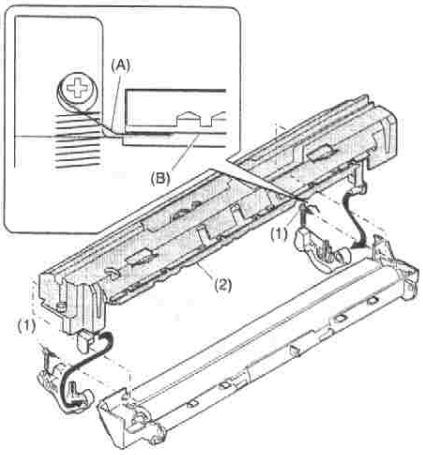


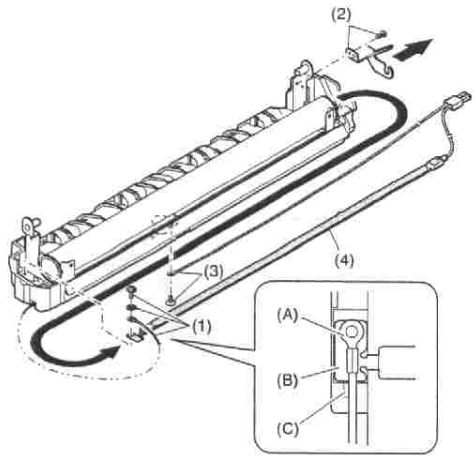
D.Heater lamp

Assembly: Insert the spring (A) into the hole (B) in the fusing frame.



Assembly: Put the paper guide earth spring (A) under the paper guide (B) before fusing.

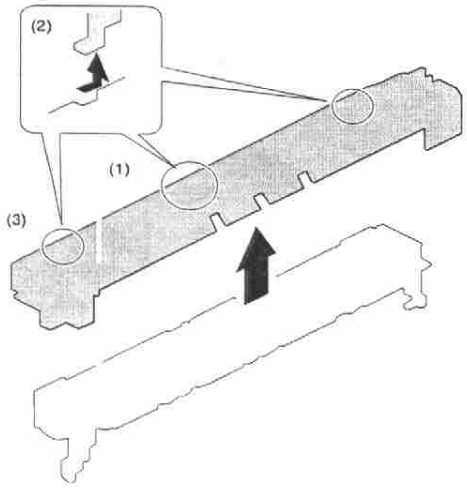


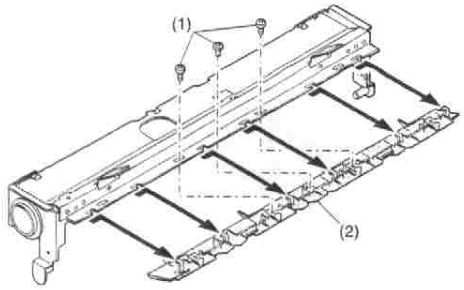


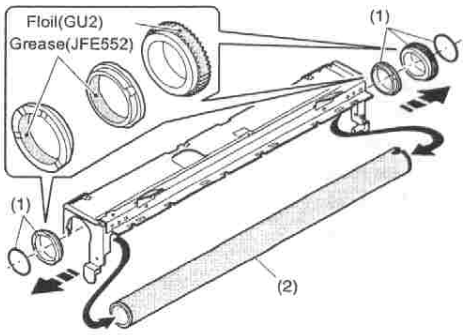
Assembly: Put the fusing harness (A) on the heater lamp (B) as shown in the figure and fix them together.<R>Place the fusing harness inside the rib (C).

E.Upper heat roller

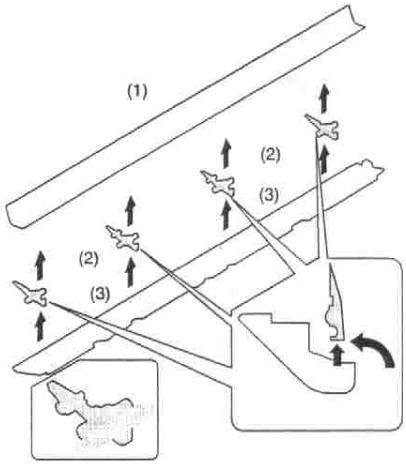
Disassembly: There are three pawls on the fusing cover. Remove the screws and slide the fusing cover to the right to remove. The heater lamp is fixed on the fusing cover with a screw. Slide the fusing cover to the front and remove the screw, then remove the heater lamp.

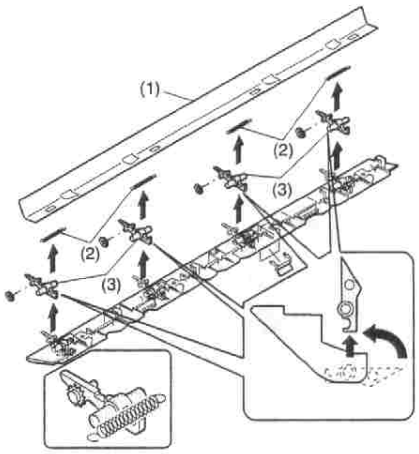






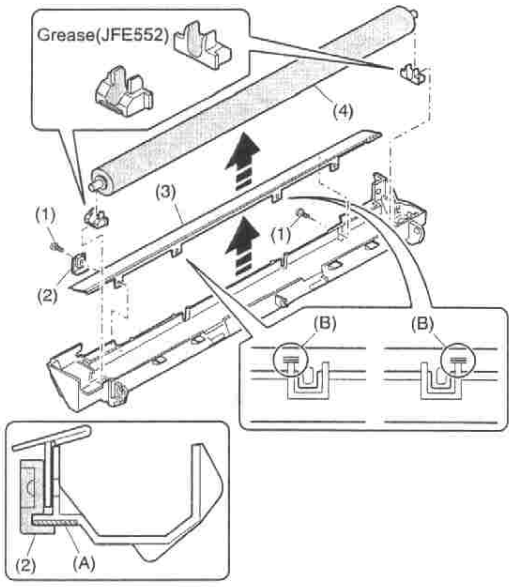
F.Separation pawl



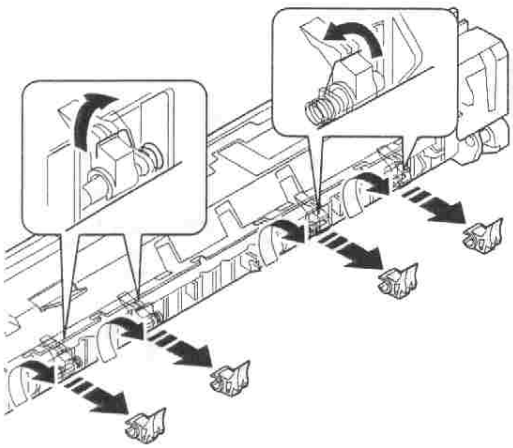


G.Lower heat roller

Assembly: When installing the paper guide (3) before fusing, fix the paper guide fixing plate with screws temporarily so that the paper guide fixing plate (2) is in contact with the frame bottom under fusing (A). Set the paper guide (3) before fusing to the bottom line of the positioning reference (B), and tighten the screw firmly.



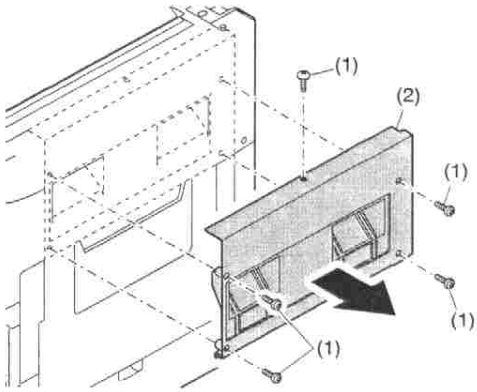
H.Separation pawl

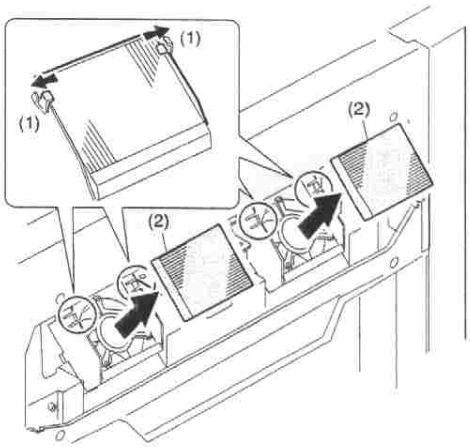


4.Paper exit section

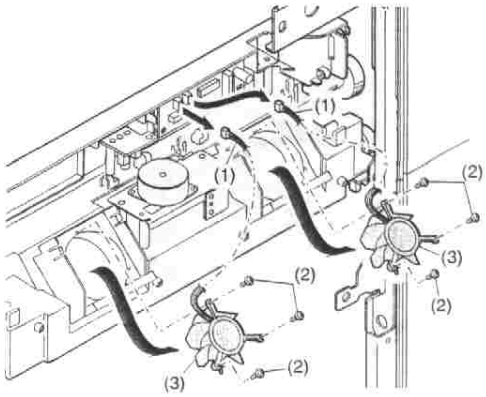
No.	Content
A	Ozone filter
B	Cooling fan
C	Paper exit unit
D	Paper exit sensor
E	Transport roller
F	Paper exit roller
G	Paper exit interface P.W.B.

A.Ozone filter

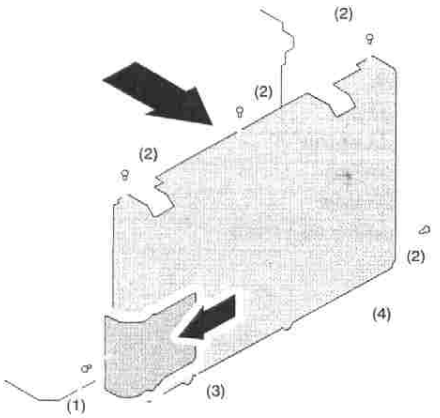


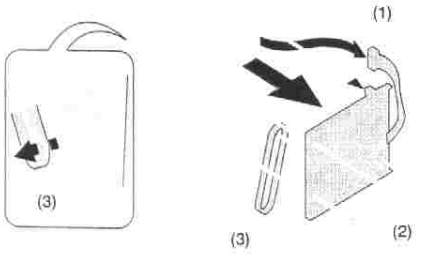


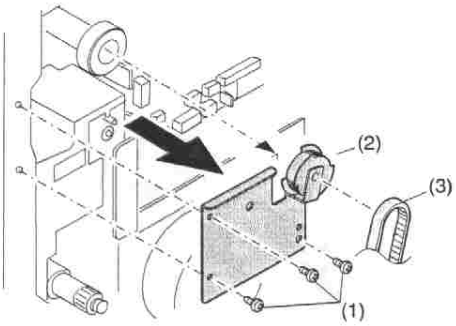
B.Cooling fan

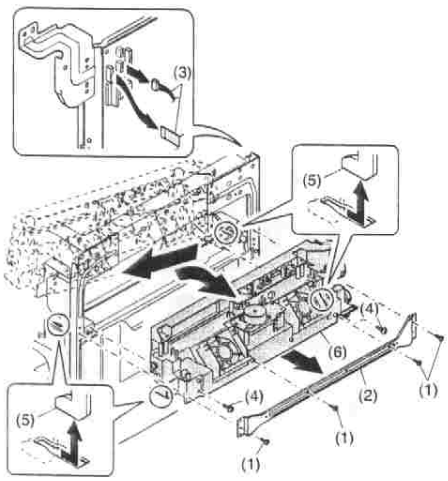


C.Paper exit unit



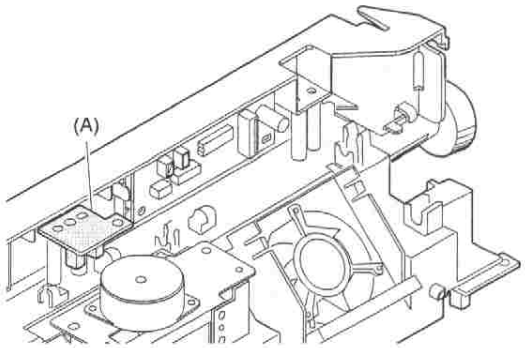




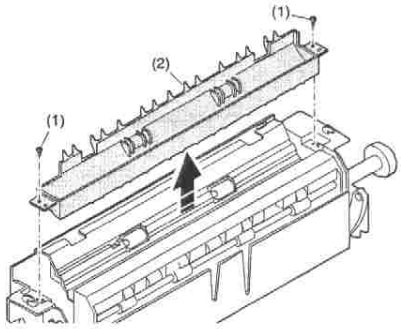


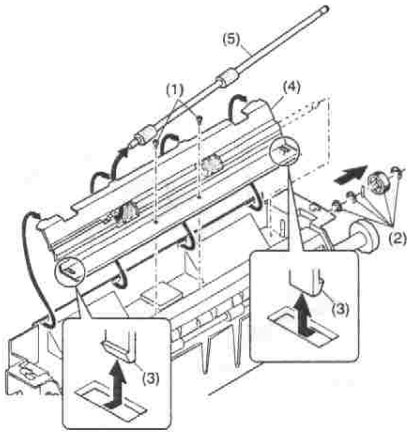
D.Paper exit sensor

(A)Exit sensor



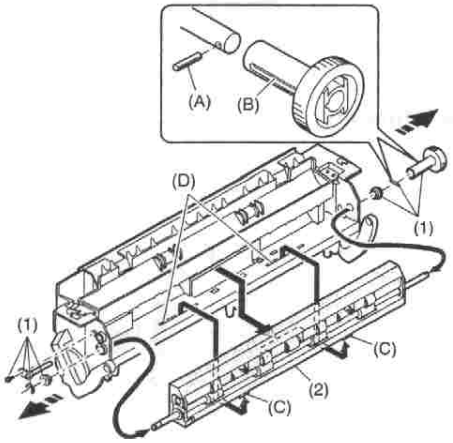
E.Transport roller

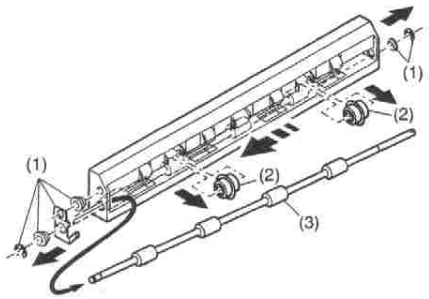




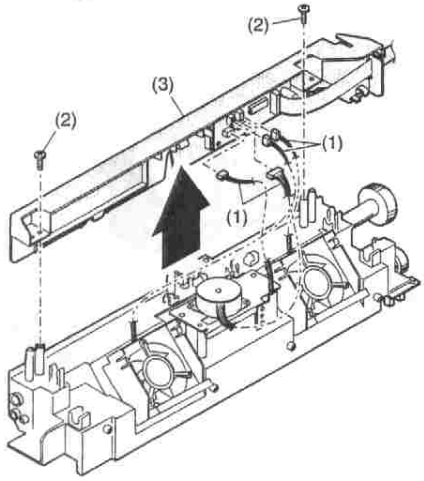
F.Paper exit roller

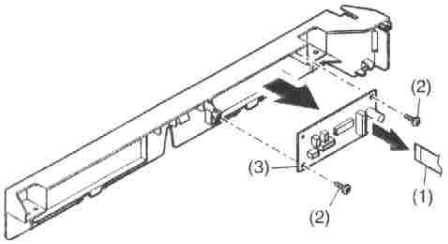
Assembly: Insert the spring pin so that the waveform (A) of the spring pin faces in the longitudinal direction of the paper exit drive gear long hole (B).<R>Be sure to insert two ribs (C) into the groove (D).





G.Paper exit interface P.W.B.



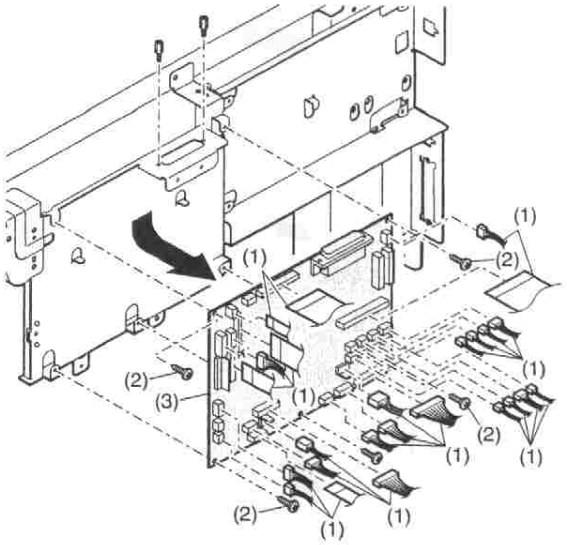


5.MCU

No.	Content
A	MCU disassembly

A.MCU disassembly

Note: When replacing the MCU PWB, be sure to replace the EEPROM of the MCU PWB to be replaced.



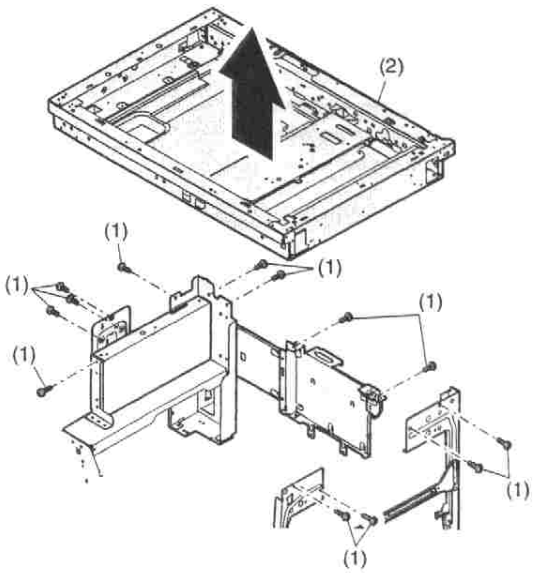
Note: When replacing the MCU PWB, be sure to restore the original jumper conditions.

6.Optical frame unit

No.	Content
A	Optical frame unit

A.Optical frame unit

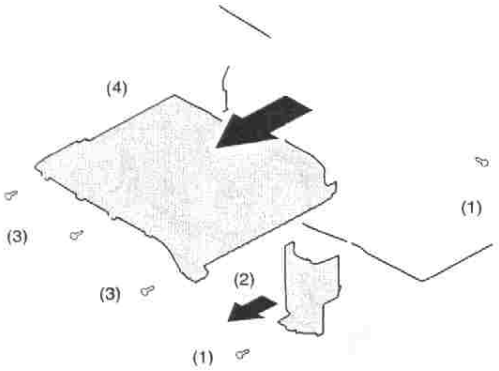
Installation: Install the optical unit in the sequence shown above.

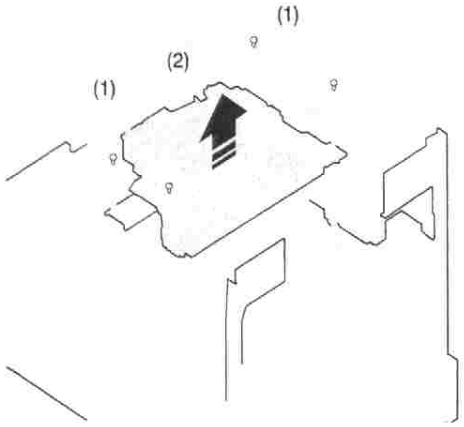


7. LSU

No.	Content
A	LSU unit

A. LSU unit





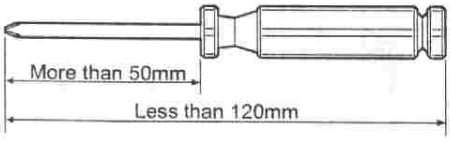
Note: Do not disassemble the LSU.

Note: When replacing the LSU, be careful not to touch the dust-shield glass.

Adjustment:

- Image lead edge position adjustment
- Image left edge position adjustment
- Paper off-center adjustment

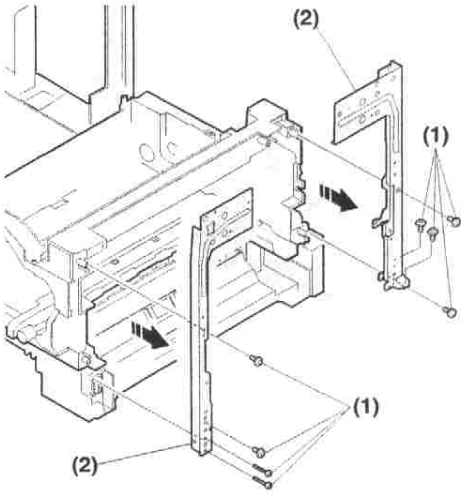
•Size of the screwdriver for removing the LSU



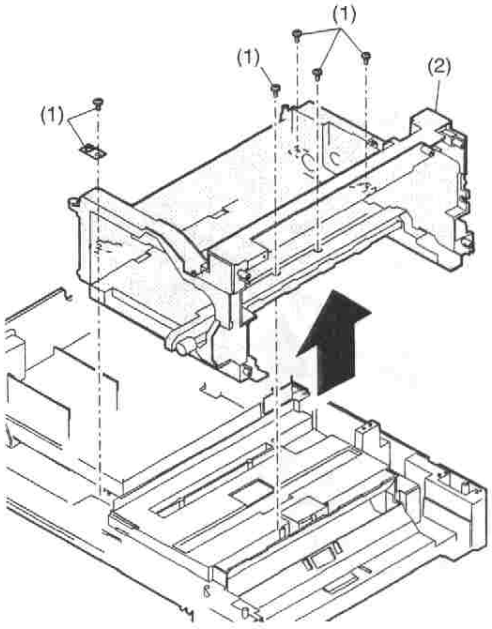
8. Tray paper feed section/Paper transport section

No.	Content
A	Middle frame unit
B	Drive unit
C	Solenoid (paper feed solenoid,, resist roller solenoid)
D	Resist roller clutch / Resist roller
E	Paper feed clutch/Paper feed roller (Semi-circular roller)

A. Middle frame unit

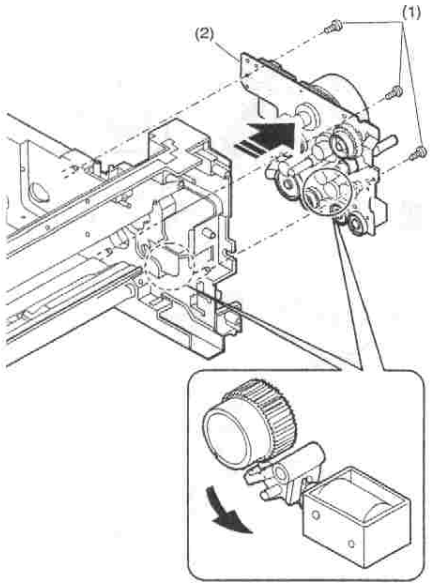


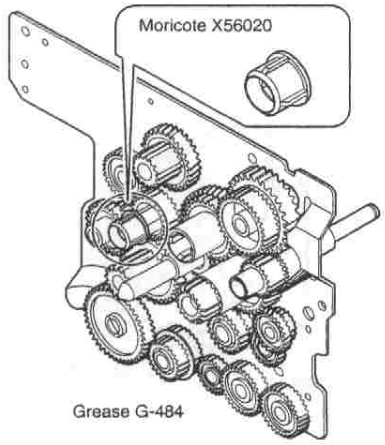
Assembly: Do not miss the door lock pawl.



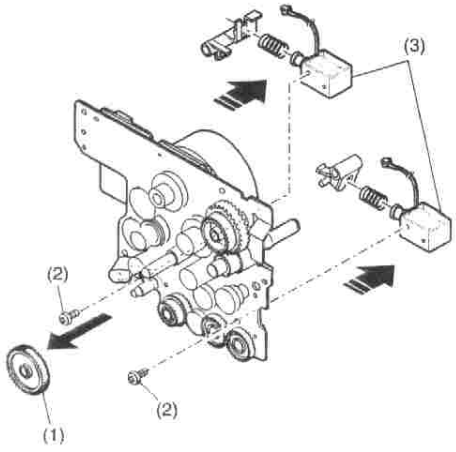
B.Drive unit

Assembly: Move down the clutch pawl as shown below, and avoid the clutch and install.

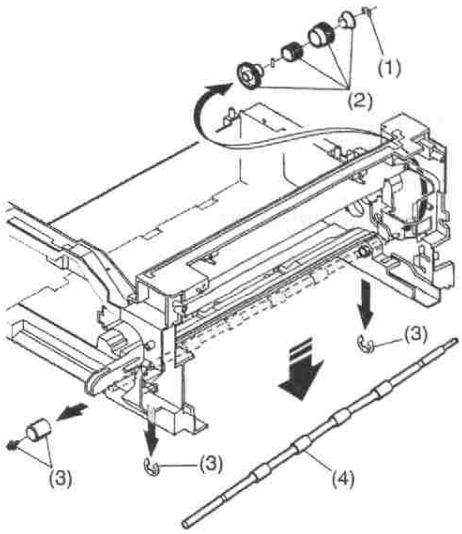




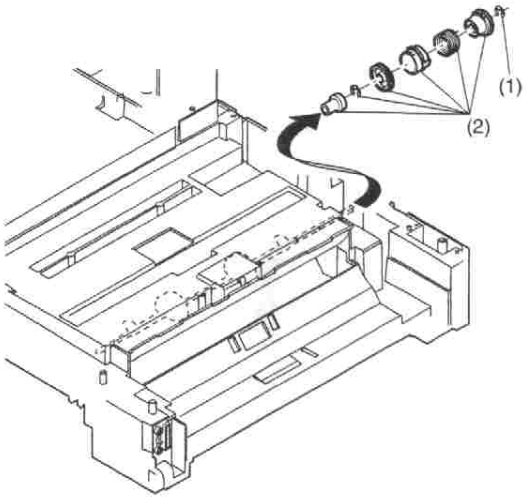
C. Solenoid (paper feed solenoid, resist roller solenoid)



D. Resist roller clutch/Resist roller



E. Paper feed clutch/Paper feed roller (Semi-circular roller)

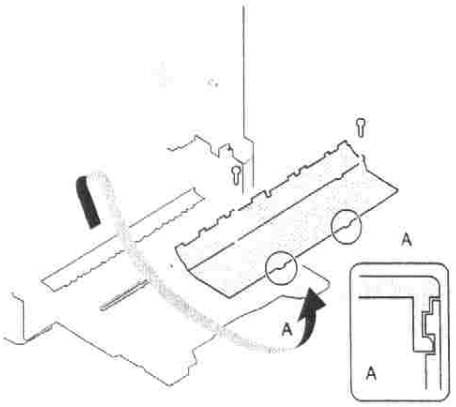


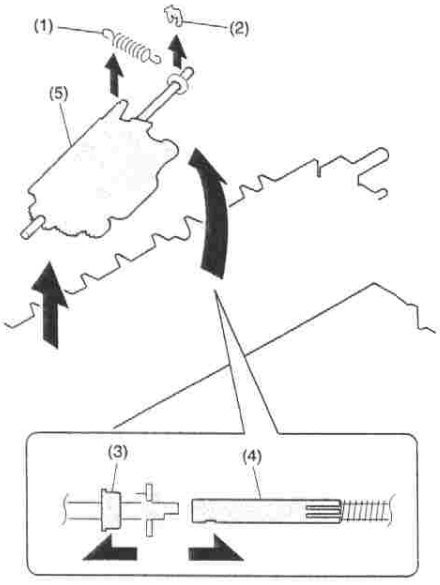
9.Manual multi paper feed section

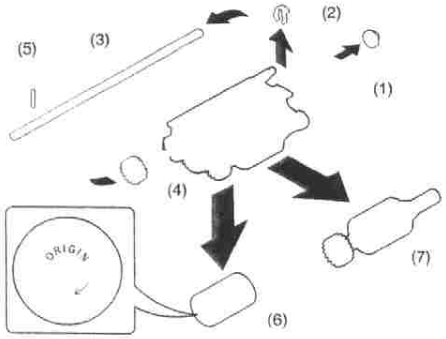
No.	Content
A	Manual transport roller/Manual paper feed roller
B	Manual multi paper feed
C	Manual feed solenoid
D	Manual transport clutch
E	Pressure plate unit
F	Manual paper feed clutch

A.Manual transport roller/Manual paper feed roller

Note: Push the lever at the right edge of the multi frame cover to the right upper side and remove it.

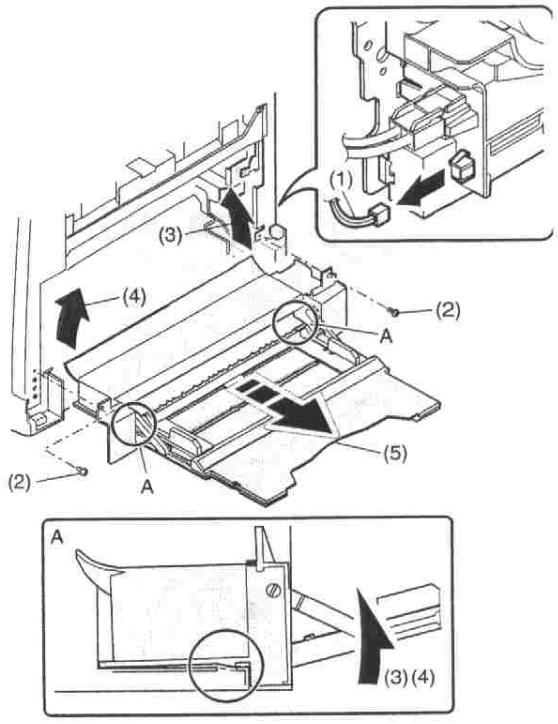




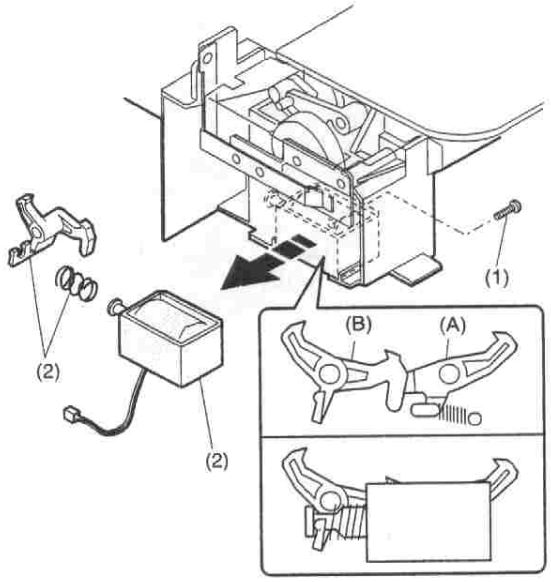


Installation: Be careful of the installing direction of the manual transport roller (6)

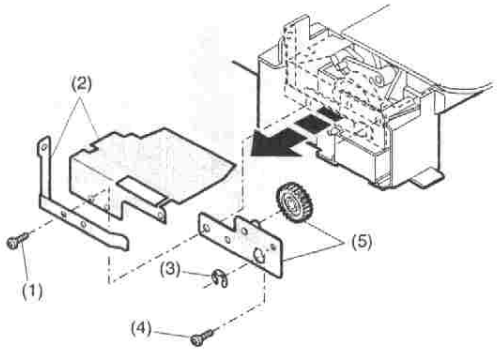
B. Manual multi paper feed

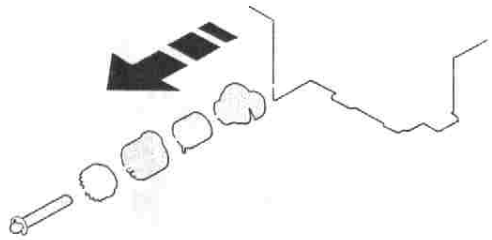


C. Manual feed solenoid

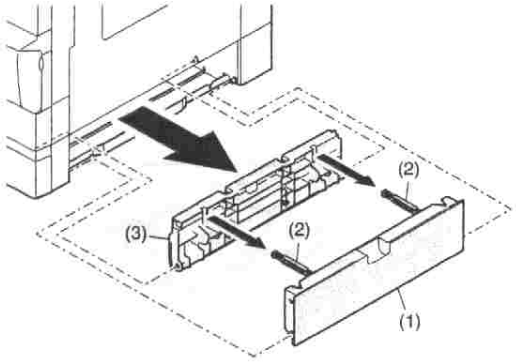


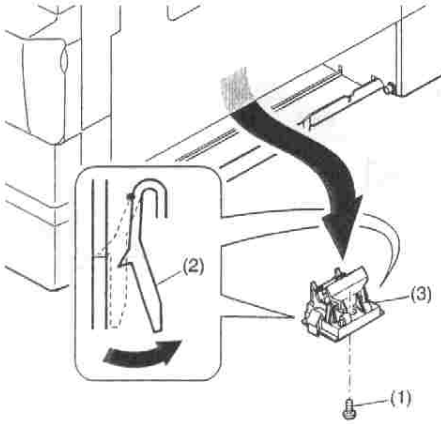
D. Manual transport clutch





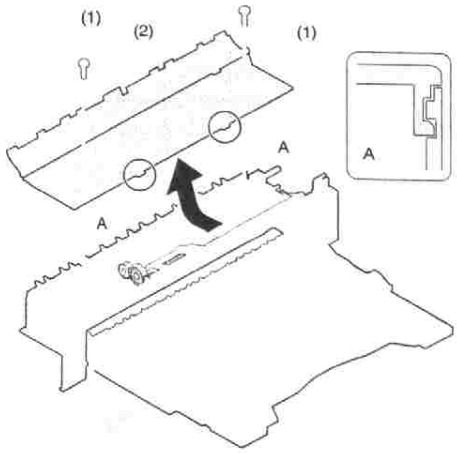
E.Pressure plate unit

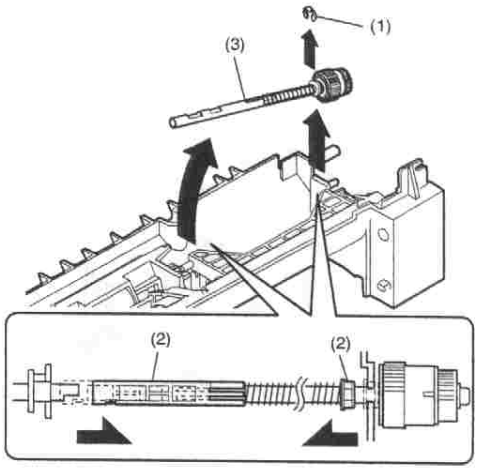


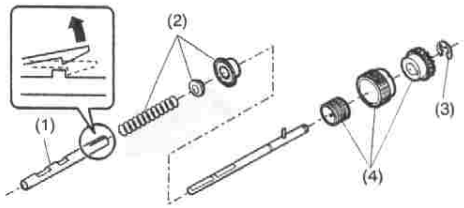


F. Manual paper feed clutch

Note: Push the lever at the right edge of the multi frame cover to the right upper side and remove it.



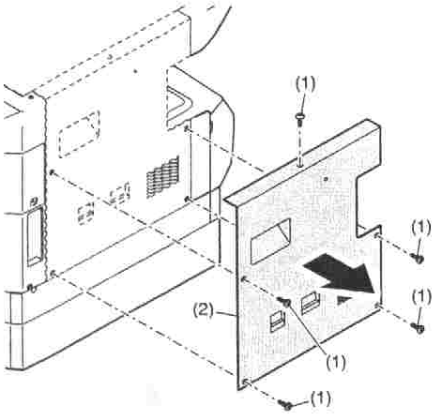


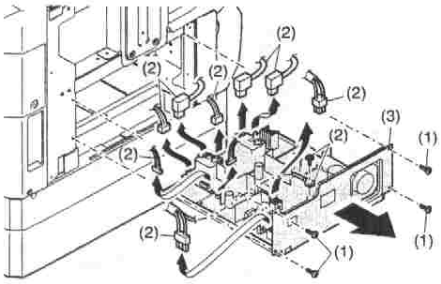


10.Power section

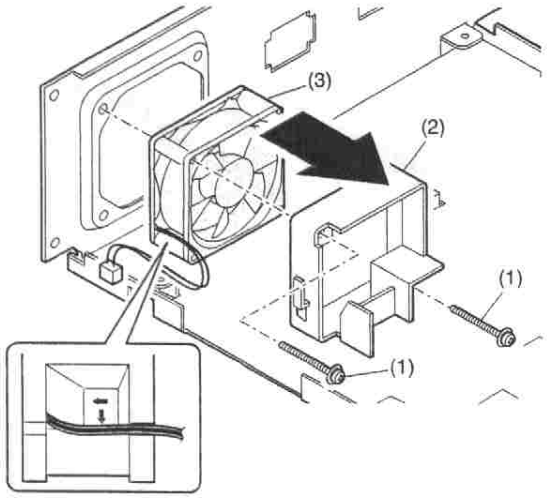
No.	Content
A	Power unit
B	Power fan
C	High voltage P.W.B.
D	Power P.W.B.
E	Power switch

A.Power unit

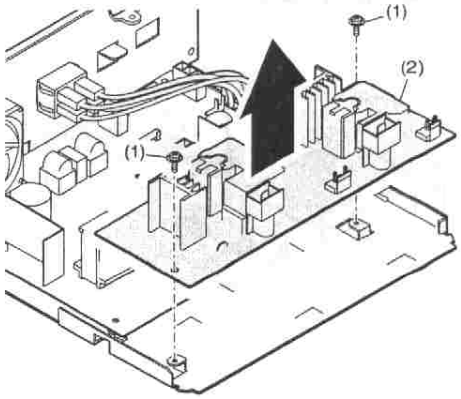




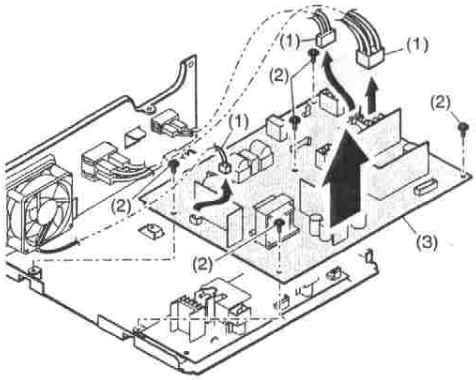
B. Power fan



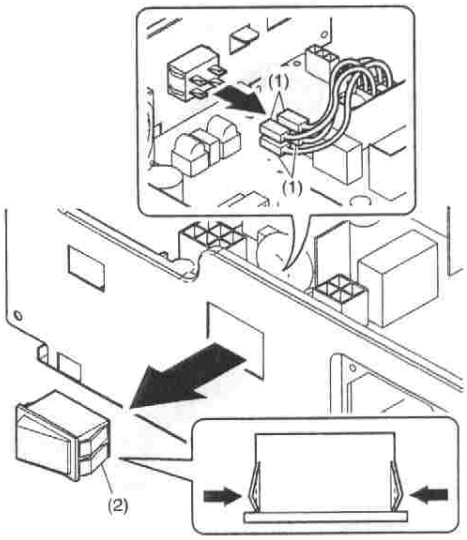
C. High voltage P.W.B.



D. Power P.W.B.



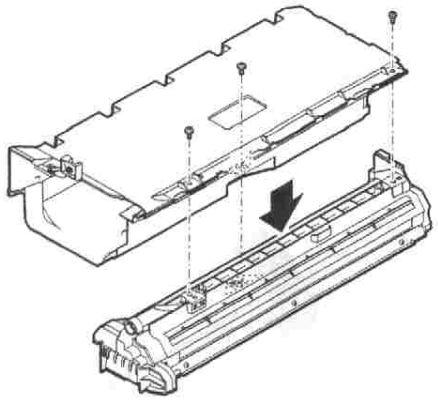
E. Power switch



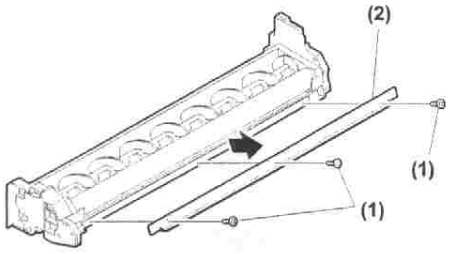
11.Developing section

No.	Contents
A	Developing box
B	Developing doctor
C	MG roller

A.Developing box

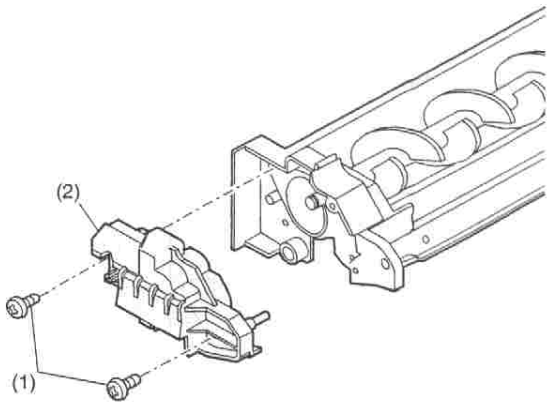


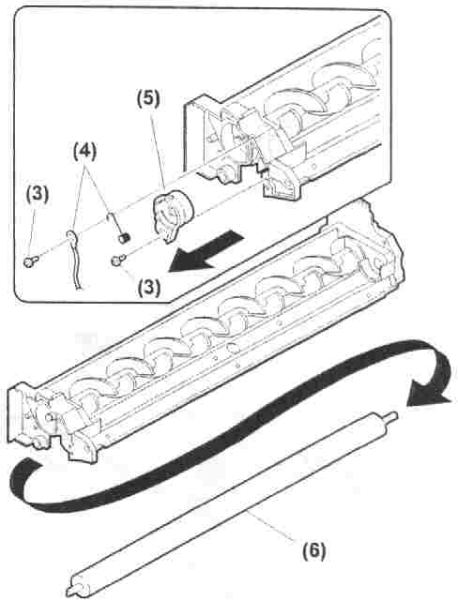
B.Developing doctor



Adjustment: Developing doctor gap adjustment

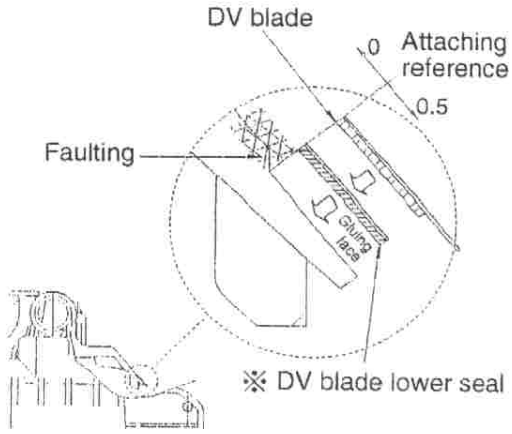
C.MG roller





Adjustment: MG roller main pole position adjustment

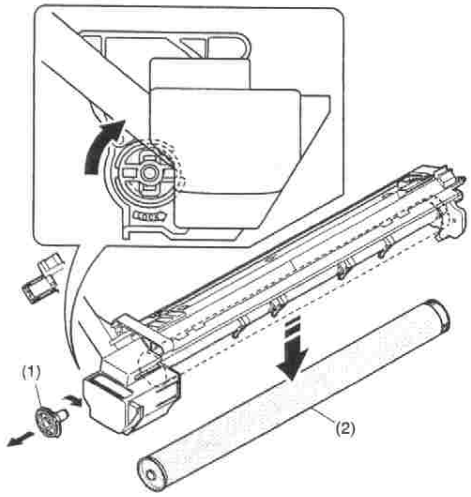
Note: Attach it to fit with the attachment reference when replacing the DV blade.



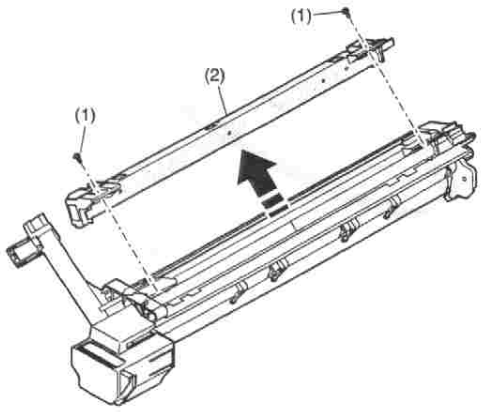
12.Process section

No.	Contents
A	Drum unit
B	Main charger unit
C	Cleaning blade

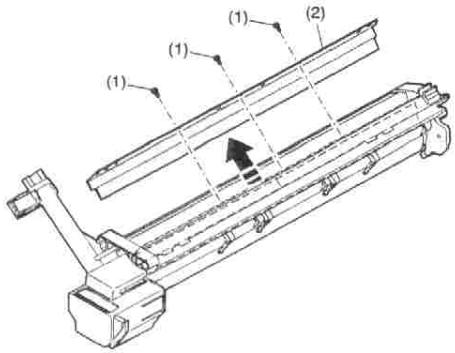
A.Drum unit



B. Main charger unit



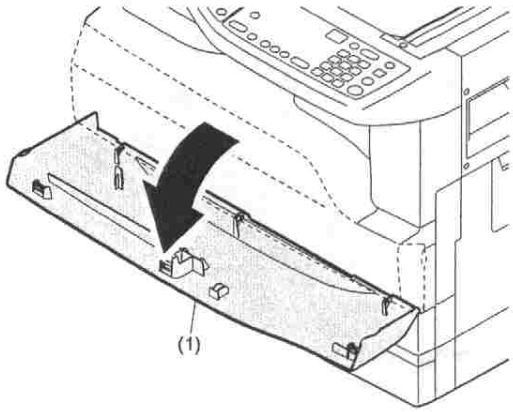
C.Cleaning blade

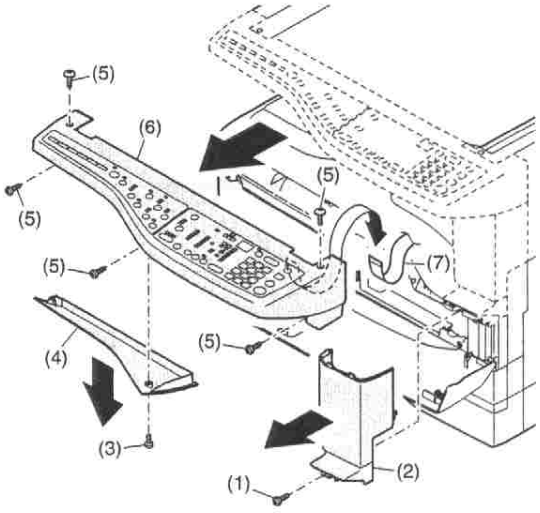


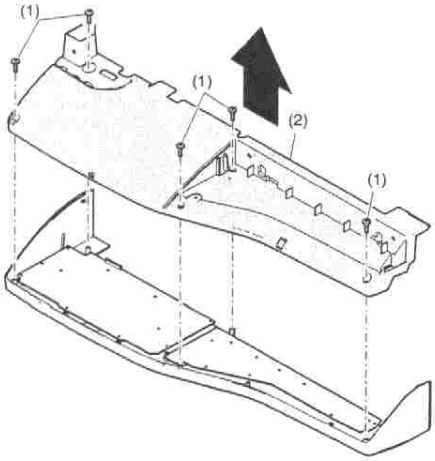
13.Others

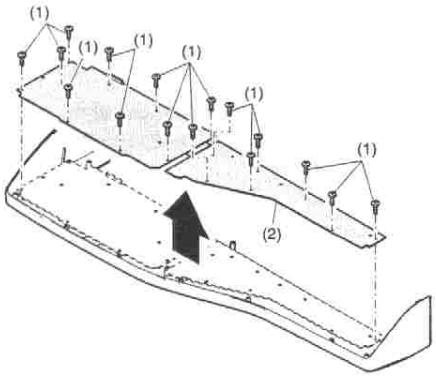
No.	Contents
A	Operation P.W.B.
B	Tray interface P.W.B.
C	Main motor
D	I/F P.W.B.
E	Paper entry sensor
F	Paper empty sensor
G	Paper feed roller

A. Operation P.W.B.

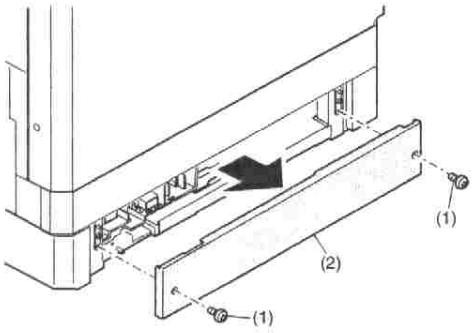


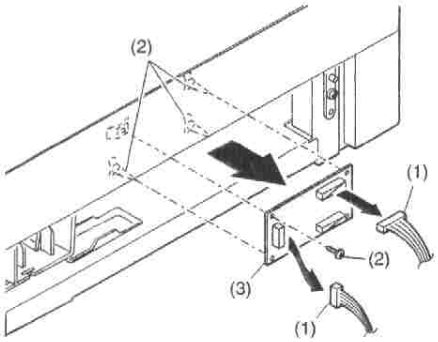




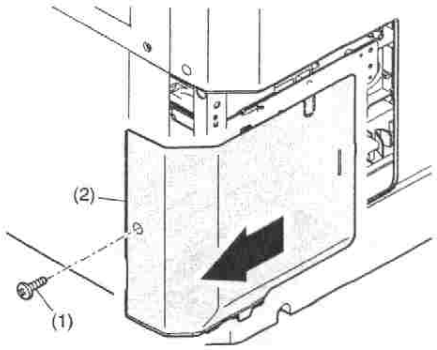


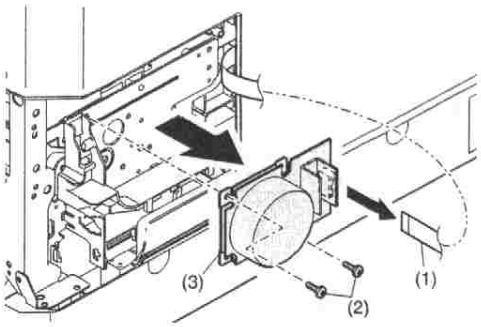
B. Tray interface P.W.B.



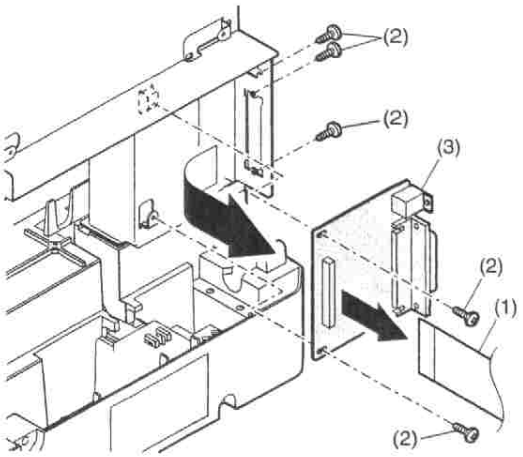


C. Main motor

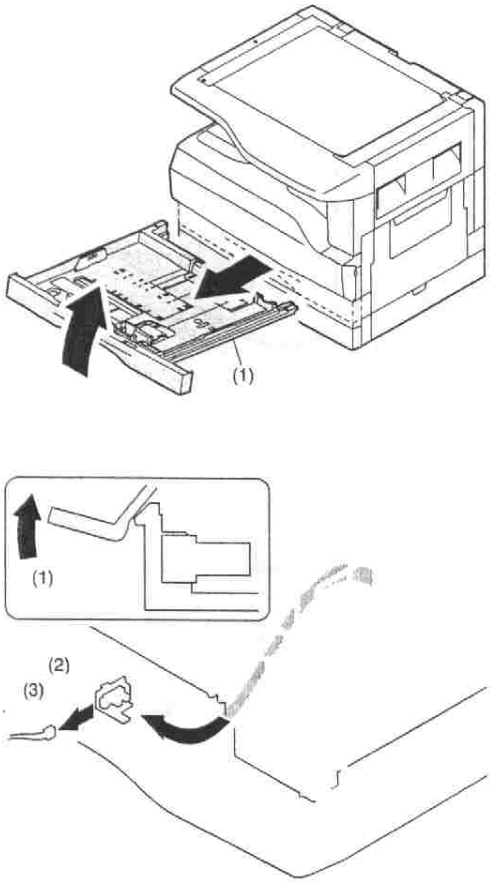




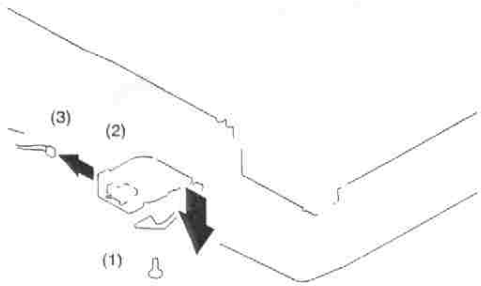
D. I/F P.W.B.



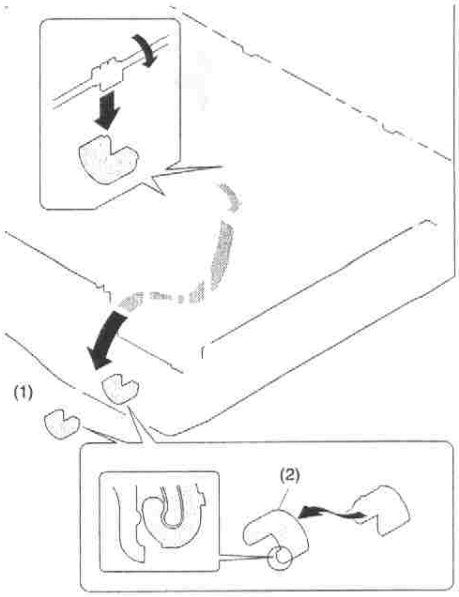
E. Paper entry sensor



F. Paper empty sensor



G. Paper feed roller



* When removing the paper feed roller, operate the paper feed clutch with SIM 6-1, and keep the paper feed roller down as shown in the figure above for operation.

[12]FLASH ROM VERSION UP PROCEDURE

1.Preparation

Write the download data (the file with the extension dwl) to the main body of AR-5316.

Necessary files for download

- Maintenance.exe (Maintenance software)
- ProcPegasus.mdl
- ProcPegasus.ini
- ProcPegasus.fmt
- Pegasus.inf
- Usbscan.sys
- Download file:***.dwl

<Note>

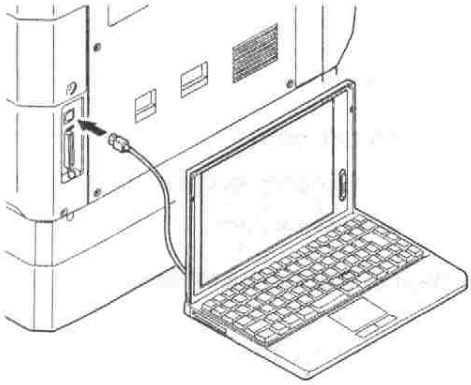
- The Download file(***.dwl) and the like that are to be downloaded should be copied, in advance, into folders that have a maintenance program.
- When creating a folder for a maintenance tool in the PC, be sure that no lengthy folder name is included in the path.

(Example)
Incorrect c:\Maintenance Download Tool
Correct c:\Maintenance\Downtool

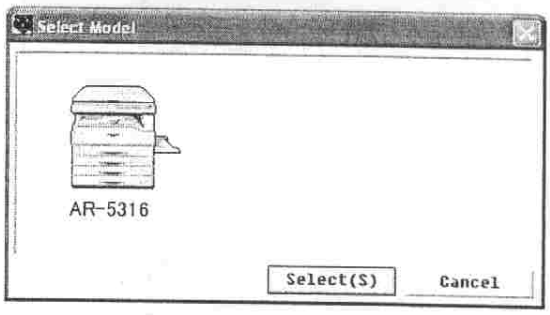
2.Download procedure

1) Main body side:
Executable by performing the Service Simulation No. 49-01 (Flash Rom program-writing mode).
(A word "d" appears on the operation panel to denote the download mode status.)

2) Connect the PC and the main body with the download cable (USB cable).
(Be sure to use a USB cable for connection. USB2.0 of the AR-EB7 is not applicable.)



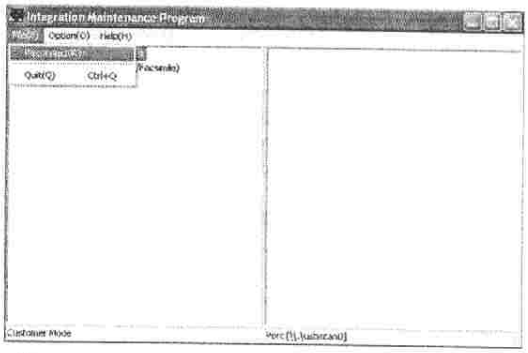
3) PC side:
Boot the maintenance program. Select the model icon.



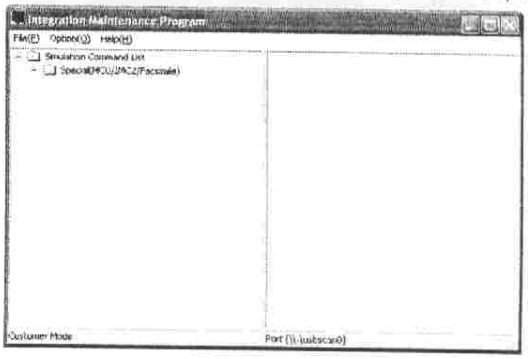
<Sample display>

4) PC side:
Confirm that the "Simulation Command List" tree is displayed on the maintenance program.

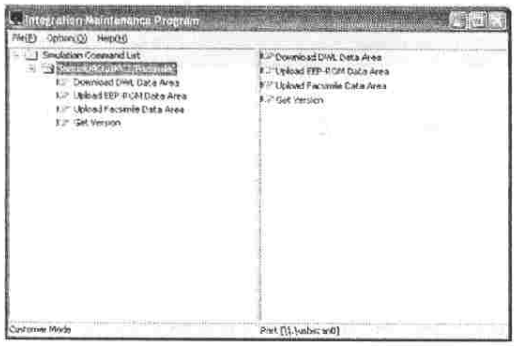
5) PC side:
When the message "the main body has not got started running" is displayed on the lowest area of the figure below after the "maintenance program" is started up, select the "File" and then "Reconnect" in the menu bar.



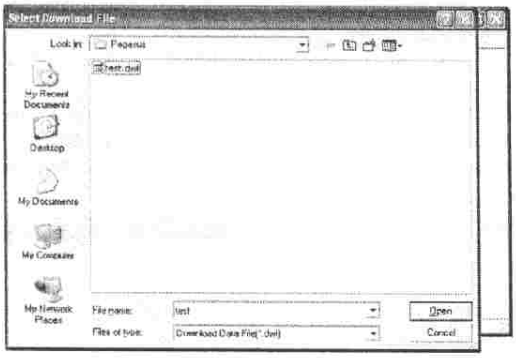
6) PC side:
Confirm a tree is displayed under the "Special (MCU/IMC2/FAX)" on the maintenance program". (If no tree is displayed, confirm that the USB is connected and select the "Reconnect" (the above 5) again.)



7) PC side:
Double click "Special (MCU/MCU2/FAX)" in the main tree item to develop the sub tree items, and double click "DWL Download" in the sub tree items.

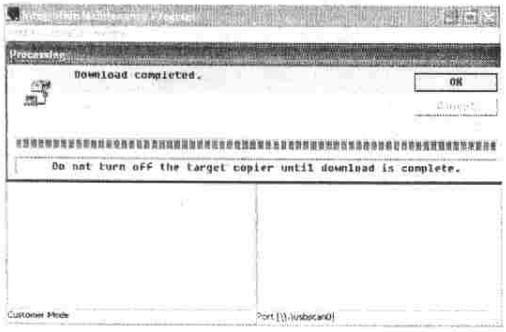


8) PC side:
Specify the download file (*.dwl).



9) PC side:
The download file is specified, download is automatically performed. The "Automatic paper selection" lamp and "Start" lamp will blink approximately 15 seconds after the download file is specified.

10) PC side:
When the message below is displayed, download is completed.
Completion message: DOWNLOAD COMPLETED



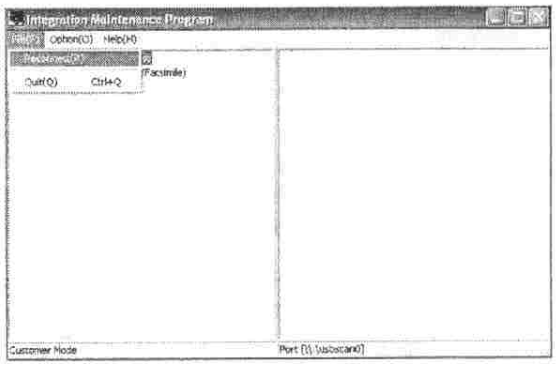
NOTE (Important):
•Be sure that the power is not turned off and the USB cable is not removed until the word "OFF" appears.

11) Main body side:
Wait until the word "OFF" appears on the operation panel.
The appearance of "OFF" indicates the completion of the download (writing into ROM).
Turn the power off.

12) After-process: Terminate the maintenance program, and turn on the power of the main body.

After the download (data transmission) has been completed, exit the software program. The USB cable can be removed at this point.

NOTE:
•For making a second connection with another machine, select the "File" and "Reconnect" in the menu bar on the maintenance program at the time of the USB being re-connected. Repeat the previous procedures from the above 5).



*** Forbidden actions while downloading (Important)**

Failure in the download concerned may not allow you to conduct the subsequent download procedures. Added care should be taken to avoid having the situation below arise while downloading.
•Switching off the main body of AR-5316.
•Disconnecting the download cable (USB cable).

*** If the above inhibit item occurs during downloading:**

Turn OFF and ON the power.
1) If "d" (which means downloading) is displayed on the operation panel LED of the machine, perform downloading again.
2) If "d" (which means downloading) is not displayed on the operation panel LED of the machine, turn OFF the power, and press and hold the ZOOM(%) key and the AUDIT CLEAR key and turn ON the power. If, then, "d" (which means downloading) is displayed on the operation panel LED of the machine, perform downloading again.
If "d" is still not displayed, the MCU must be replaced.

3. Installation procedure

A. USB joint maintenance program installation

The driver is installed by plug and play.

B. Installation procedure on Windows XP

1) Machine side:
Executable by performing the Service Simulation No. 49-01 (Flash Rom program-writing mode).
(A word "d" appears on the operation panel to denote the download mode status.)

2) Connect the machine and the PC with a USB cable.
(Be sure to use a USB cable for connection. USB2.0 of the AR-EB7 is not applicable.)

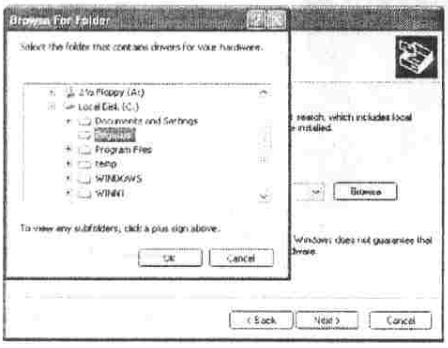
3) Check that the following display is shown.
Select "Install from a list or the specific location" and press the NEXT button.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
DOWNLOAD
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

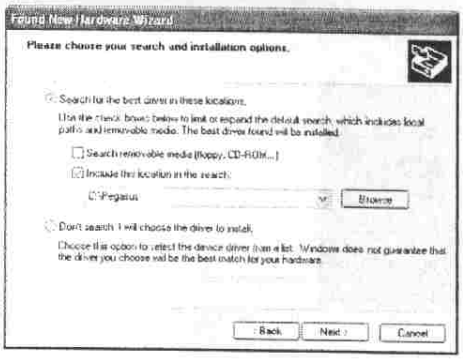
4) Select "Include this location in the serch". If the retrieval area does not include the folder which includes the maintenance tool driver (Pegasus.inf), select "Browse"
If the folder path is properly shown, press the NEXT button to go to procedure 7).

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best drivers in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\ENGLISH\WIN9XPRO\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

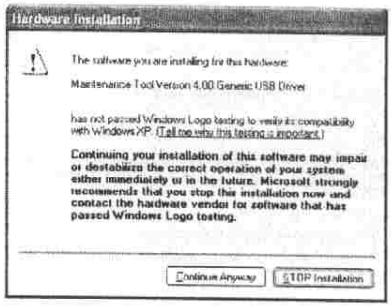
5) Select the folder which includes the maintenance tool driver (Pegasus.inf), and press the OK button.
(When the driver is included in the "C:\Pegasus" folder:)



6) Check that the path to the folder which includes the maintenance tool driver (Pegasus.inf) is shown, and press the NEXT button.


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best drivers in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\Pegasus
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

7)) Check that the following display is shown. Press the Continue Anyway button.


Hardware Installation
The software you are installing for this hardware:
Maintenance Tool Version 4.00 Generic USB Driver
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

8) When installation is completed, the following display is shown.
Press the Finish button.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
Maintenance Tool Version 4.00 Generic USB Driver
Click Finish to close the wizard.
Finish

The installation procedure (on Windows XP) is completed with the above operation.

C. Installation procedure on Windows 2000

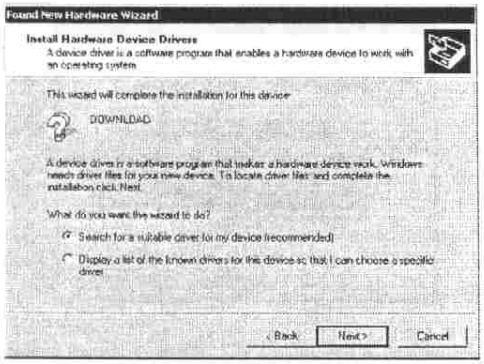
1) Machine side:
Executable by performing the Service Simulation No. 49-01 (Flash Rom program-writing mode).
(A word "d" appears on the operation panel to denote the download mode status.)

2) Connect the machine and the PC with a USB cable.
(Be sure to use a USB cable for connection. USB2.0 of the AR-EB7 is not applicable.)

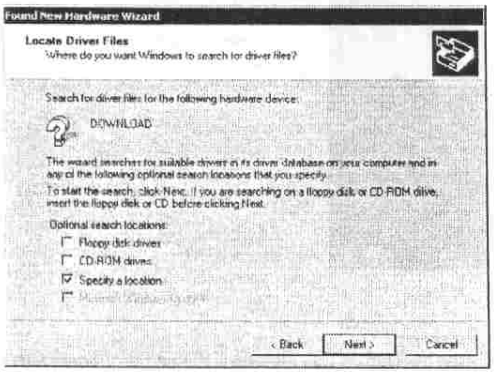
3) Check that the new hardware search wizard is shown. Press the NEXT button.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

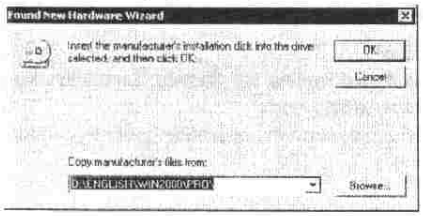
4) Select "Serch for a suitable driver for my device" and press the NEXT button.


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
DOWNLOAD
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

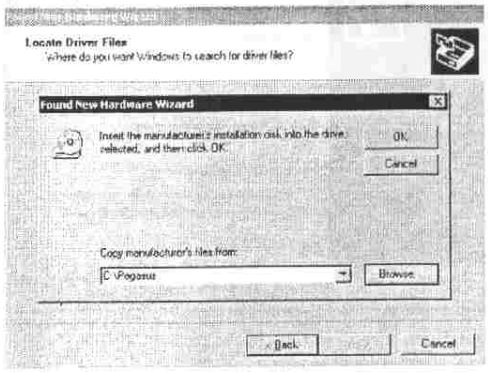
5) Select "Specify a location" and press the NEXT button.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
DOWNLOAD
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
< Back
Next >
Cancel

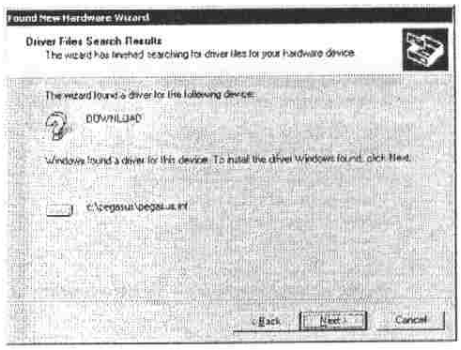
6) Press the "Browse" button. Specify the folder which includes the maintenance tool driver (Pegasus.inf)



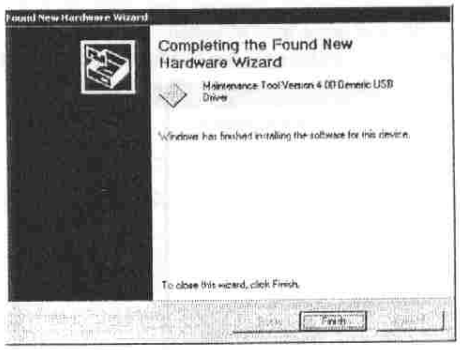
7) Specify the folder which includes the maintenance tool driver (Pegasus.inf), and press the OPEN button.
Check that the path to the folder which includes the maintenance tool driver (Pegasus.inf) is properly displayed, and press the OK button.
(When the maintenance tool driver is included in the folder of "D:\Pegasus")



8) Press the NEXT button, and installation is started.


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
DOWNLOAD
Windows found a driver for this device. To install the driver Windows found, click Next.
c:\pegasus\pegasus.inf
< Back
Next >
Cancel

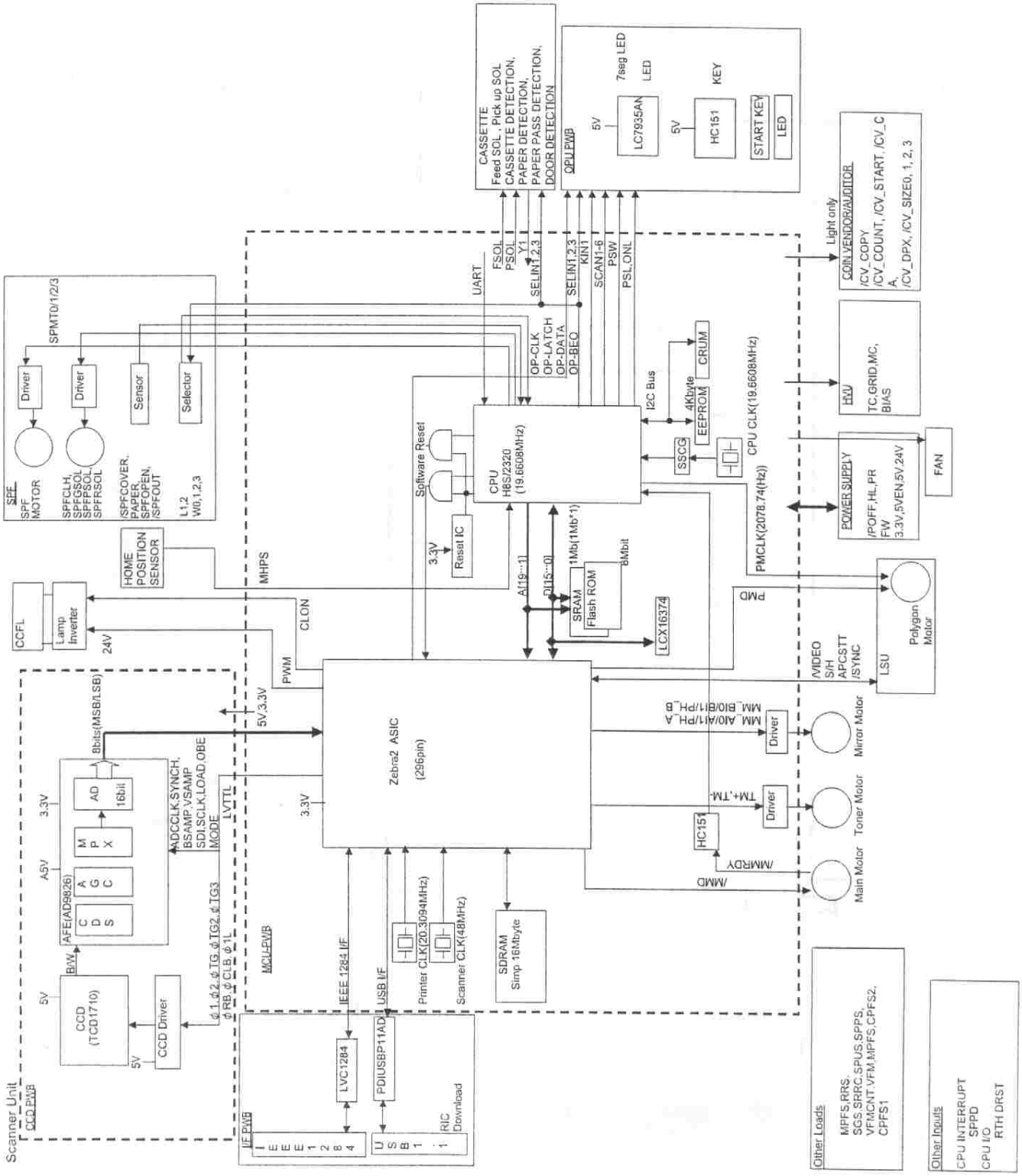
9) When installation is completed, the following display is shown. Press the Finish button.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
Maintenance Tool Version 4.00 Generic USB Driver
Windows has finished installing the software for this device.
To close this wizard, click Finish.
Finish

The installation procedure of the joint maintenance program on Windows 2000 is completed with the above operation.

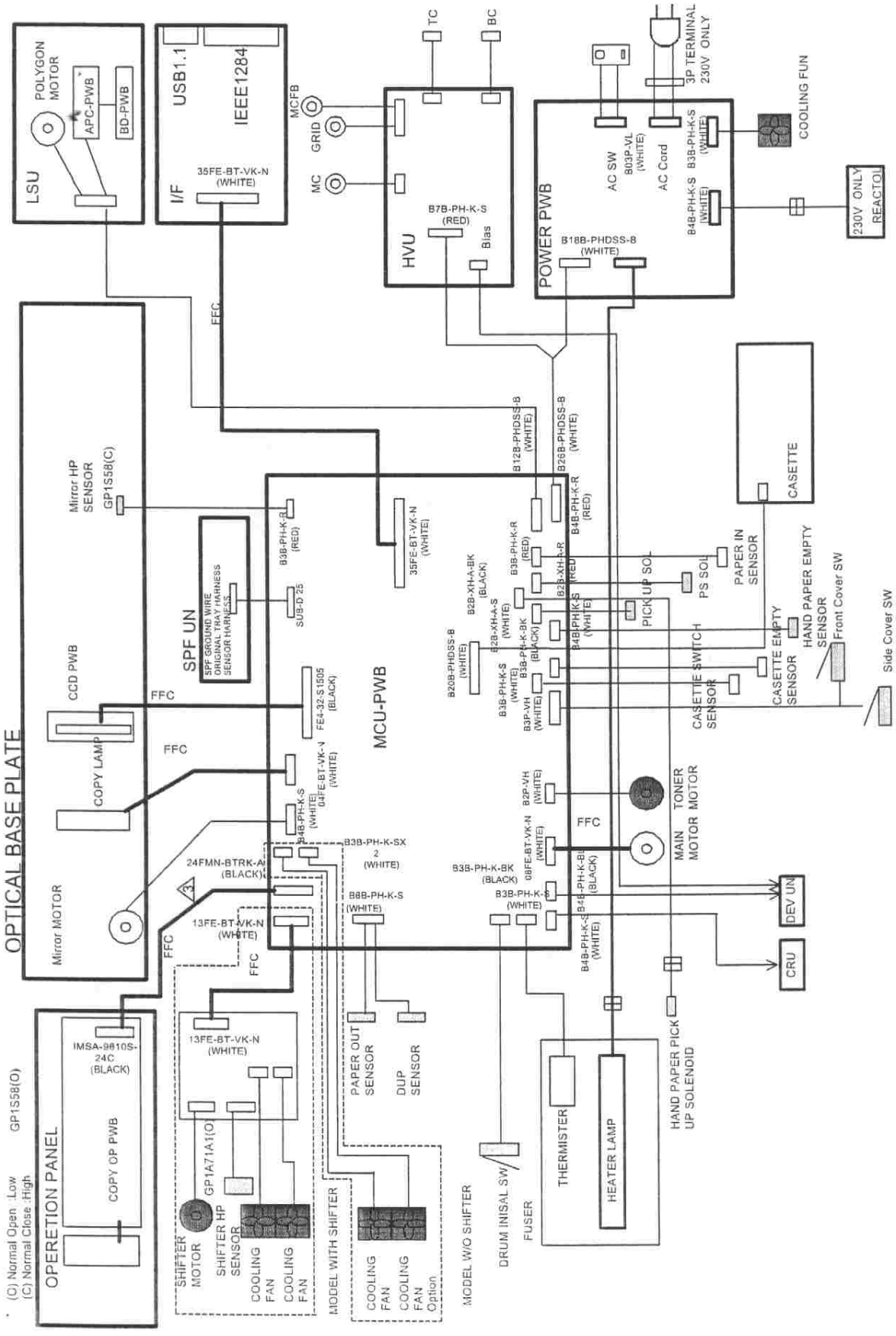
[13] ELECTRICAL SECTION

1. Block diagram



3. Actual wiring diagram

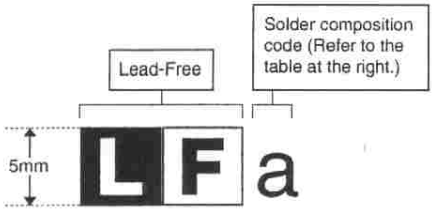
ACTUAL WIRING DIAGRAM 1/7



LEAD-FREE SOLDER

The PWB's of this model employs lead-free solder. The "LF" marks indicated on the PWB's and the Service Manual mean "Lead-Free" solder.
The alphabet following the LF mark shows the kind of lead-free solder.

Example:



<Solder composition code of lead-free solder>

Solder composition	Solder composition code
Sn-Ag-Cu	a
Sn-Ag-Bi Sn-Ag-Bi-Cu	b
Sn-Zn-Bi	z
Sn-In-Ag-Bi	i
Sn-Cu-Ni	n
Sn-Ag-Sb	s
Bi-Sn-Ag-P Bi-Sn-Ag	p

(1) NOTE FOR THE USE OF LEAD-FREE SOLDER THREAD

When repairing a lead-free solder PWB, use lead-free solder thread.
Never use conventional lead solder thread, which may cause a breakdown or an accident.
Since the melting point of lead-free solder thread is about 40°C higher than that of conventional lead solder thread, the use of the exclusive-use soldering iron is recommendable.

(2) NOTE FOR SOLDERING WORK

Since the melting point of lead-free solder is about 220°C, which is about 40°C higher than that of conventional lead solder, and its soldering capacity is inferior to conventional one, it is apt to keep the soldering iron in contact with the PWB for longer time. This may cause land separation or may exceed the heat-resistive temperature of components. Use enough care to separate the soldering iron from the PWB when completion of soldering is confirmed.
Since lead-free solder includes a greater quantity of tin, the iron tip may corrode easily. Turn ON/OFF the soldering iron power frequently.
If different-kind solder remains on the soldering iron tip, it is melted together with lead-free solder. To avoid this, clean the soldering iron tip after completion of soldering work.
If the soldering iron tip is discolored black during soldering work, clean and file the tip with steel wool or a fine filer.

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SHARP CORPORATION
Digital Document System Group
Products Quality Assurance Department
Yamatokoriyama, Nara 639-1186, Japan
2005 July Printed in Japan (N)